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Field Tests of Industrial Coal Stoker Fired Boilers for Inorganic Trace Element and Polynuclear Aromatic Hydrocarbon Emissions

KVB, Inc.
Minneapolis, MN

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16. ABSTRACT The report gives results of 23 tests for 21 polynuclear aromatic hydrocarbons (PAHs) and 74 inorganic trace elements in the effluent of 11 coal stoker fired boilers. The results were obtained from data gathered by analysis of the catch collected from the Source Assessment Sampling System (SASS) train, for collection of particulate and volatile matter in addition to gaseous samples. SASS tests were conducted in accordance with EPA Level 1 guidelines, which provide only preliminary emissions data, to help identify problem areas. In addition to test results, the report describes the facilities tested, coals fired, test equipment and procedures, analytical procedures involved for organic and inorganic analysis, and data reduction.

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Combustion	Aromatic Polycyclic Hydrocarbons	Mass Fired Overfeed Stokers	21B	
Coal			21D	07C
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1.0 INTRODUCTION

This report presents the results of tests for polynuclear aromatic hydrocarbons (PAH) and inorganic trace elements in the effluent of eleven coal stoker fired boilers. These data are part of a larger stoker test program (1-22) whose main objective was to produce information which will increase the ability of the boiler manufacturers to design and fabricate stoker boilers that are an economical and environmentally satisfactory alternative to oil and gas-fired units.

This field test program was awarded to the American Boiler Manufacturers Association (ABMA), sponsored by the United States Department of Energy (DOE) under contract number EF-77-C-01-2609, and co-sponsored by the United States Environmental Protection Agency (EPA) under inter-agency agreement number IAG-D7-E681. The program was directed by an ABMA Stoker Technical Committee which, in turn, subcontracted the field test portion to KVB, Inc., of Minneapolis, Minnesota. The contractor for most of the analytical work was Battelle Columbus Laboratories. A. D. Little, Inc. and Acurex Corporation shared in the analysis of the Site A samples.

The EPA (IERL-RTP) has developed the Source Assessment Sampling System (SASS) train for collection of particulate and volatile matter in addition to gaseous samples. The "catch" from the SASS train is analyzed for polynuclear aromatic hydrocarbons (PAH) and inorganic trace elements.

The objectives of the SASS testing portion of this program are to determine the organic and inorganic makeup of boiler emissions which cannot be detected by using the standard EPA Method 5 train. SASS tests were conducted in accordance with EPA Level 1 guidelines, which utilize quantitative sampling and analysis procedures that yield final analytical results accurate to within a factor of 3. Unlike EPA Method 5, Level 1 procedures provide only preliminary emissions data to help identify problem areas. (23)

Twenty-three SASS tests were run on 11 different coal stoker fired boilers to determine emissions data for 74 inorganic trace elements and 21 PAHs. All SASS tests, except for the two run at Site J, were run at the boiler outlet or dust collector inlet. The emissions of most concern are the suspected carcinogens or the emissions with high probability of being carcinogens. The inorganic trace elements that were investigated and are listed as carcinogens and high probability carcinogens by the Office of Air Quality Planning and Standards (OAQPS) are: arsenic, beryllium, cadmium, and nickel. There is some controversy over which organic

compounds should be classified as suspected or high probability carcinogens. A 1972 publication by the National Academy of Sciences (24) lists dimethylbenzanthracenes, 3-Methychloanthrene, dibenzoanthracenes and dibenzopyrenes as being carcinogenic to varying degrees. These, however, are not on OAQPS's list of 21 high probability carcinogens.

Many changes have taken place in the design and with the testing procedures involving the SASS train during the course of this testing program. SASS testing at Sites A, B, and C were conducted with an early model SASS train. A new model SASS train with some minor design improvements was purchased by the EPA and used by KVB after testing at Site C. One change was made and went unnoticed until the field testing part of the program was completed. This involved a change in the sampling flow rate at the cyclones. The old model SASS train used a sample flow rate at the cyclones of 4 actual cubic feet per minute, while the new SASS train required a flow rate of 4 wet standard cubic feet per minute. This sample flow rate must be maintained in order to preserve the cyclone cut points. The old sample flow rate was used during the remainder of the program producing higher cyclone cut points for tests after Site C, because new operating instructions were not received.

After discussions with Acurex Corporation, the designer of the SASS train, and with Southern Research Institute which has calibrated the cyclones, corrected cut points were determined for the flow rates used during the tests. Therefore, the cut points for the cyclones used at Test Sites A, B, and C are 10, 3, and 1 micrometers while the cut points for the cyclones used at Test Sites D through K are 18.5, 5.9, and 1.4 micrometers.

The SASS Technical Report contains data from 11 boilers, or test sites, tested under the ABMA program. The SASS emissions data are presented in three different sets of units: nonograms per joule of energy input, micrograms per dry standard cubic meter of flue gas sampled, and grams per kilograms of fuel input. To protect the interests of the host boiler facilities, each site has been given a letter designation. A complete description of each unit and all tests run at each site can be found in the corresponding site reports referenced at the end of this report. This report contains a description of the test equipment and procedures, analytical procedures, data reduction techniques, the test data, and a brief description of each facility tested and the coals fired.

2.0 EXECUTIVE SUMMARY

2.1 OBJECTIVES AND SCOPE OF PROGRAM

The objective of the SASS testing portion of this program is to determine the organic and inorganic makeup of the flue gas emitted from coal stoker fired boilers. The EPA (IERL-RTP) has developed the Source Assessment Sampling System (SASS) train for collection of particulate and volatile matter in addition to gaseous samples. The "catch" from the SASS train is analyzed for polynuclear aromatic hydrocarbons (PAH) and inorganic trace elements. The results yield emissions data accurate to within a factor of 3 to help identify problem areas that may necessitate further study.

Twenty-three SASS tests were run on 11 different coal stoker fired boilers to determine emissions data for 74 inorganic trace elements and 21 polynuclear aromatic hydrocarbons (PAH). At least one SASS test was run on each coal burned at the 11 sites tested. Seventeen of the tests were run on Eastern bituminous coals and the remaining 6 tests were run on Western coals having lower heating values.

The 11 units tested during this program represent a wide range of state-of-the-art designs since stoker designs have changed very little over the past 20 years. Three of these units were spreader stokers with reinjection from the dust collector, three of these units were spreader stokers without reinjection from the dust collector, and five were mass-fired overfeed stokers. As-found firing conditions were used during the running of these tests.

Table 2-1 lists the 74 inorganic trace elements and the 21 PAHs sought, along with the type of test used to determine them. Throughout this report, the trace elements are listed in order of atomic number, and the organic compounds in order of molecular weight. Spark source mass spectrometry (SSMS) and atomic absorption spectrophotometry (AAS) were used in determining the inorganics, while gas chromatography with quadrupole mass spectrometry (GC/MS) was used to detect PAHs.

TABLE 2-1

LIST OF TRACE ELEMENTS AND PAHs SOUGHT
AND THE METHODS USED TO DETECT THEM

Lithium	- SSMS	*Arsenic	- SSMS, AAS	Samarium	- SSMS	Phenanthrene	- GC/MS
*Beryllium	- SSMS	Selenium	- SSMS	Europium	- SSMS	Anthracene	- GC/MS
Boron	- SSMS	Bromine	- SSMS	Gadolinium	- SSMS	Methylanthracenes/Phenanthrenes	- GC/MS
Fluorine	- SSMS	Rubidium	- SSMS	Terbium	- SSMS	Fluoranthene	- GC/MS
Sodium	- SSMS	Strontium	- SSMS	Dysprosium	- SSMS	Pyrene	- GC/MS
Magnesium	- SSMS	Yttrium	- SSMS	Holmium	- SSMS	Methylpyrene/Fluoranthene	- GC/MS
Aluminium	- SSMS	Zirconium	- SSMS	Erbium	- SSMS	Benzo(c)phenanthrene	- GC/MS
Silicon	- SSMS	Biobium	- SSMS	Thulium	- SSMS	Benz(a)anathracene	- GC/MS
Phosphorus	- SSMS	Nolybdenum	- SSMS	Ytterbium	- SSMS	Chrysene	- GC/MS
Sulfur	- SSMS	Ruthenium	- SSMS	Lutetium	- SSMS	Methylchrysenes	- GC/MS
Chlorine	- SSMS	Rhodium	- SSMS	Halfnium	- SSMS	**Dimethylbenzanthracenes	- GC/MS
Potassium	- SSMS	Paladium	- SSMS	Tantalum	- SSMS	Benzfluoranthenes	- GC/MS
Calcium	- SSMS	Silver	- SSMS	Tungsten	- SSMS	Benzo(e)pyrene	- GC/MS
Scandium	- SSMS	*Cadmium	- SSMS	Rhenium	- SSMS	*,**Benzo(a)pyrene	- GC/MS
Titanium	- SSMS	Indium	- SSMS	Osmium	- SSMS	Perylene	- GC/MS
Vanadium	- SSMS	Tin	- SSMS	Iridium	- SSMS	Indeno(1,2,3-cd)pyrene	- GC/MS
Chromium	- SSMS	Antimony	- SSMS, AAS	Platinum	- SSMS	Benzo(g,h,i)perylene	- GC/MS
Manganese	- SSMS	Tellurium	- SSMS	Gold	- SSMS	**3-Methychlolanthrene	- GC/MS
Iron	- SSMS	Iodine	- SSMS	Mercury	- AAS	**Dibenzoanthracenes	- GC/MS
Cobalt	- SSMS	Cesium	- SSMS	Thallium	- SSMS	**Dibenzopyrenes	- GC/MS
*Nickel	- SSMS	Barium	- SSMS	Lead	- SSMS	Coronene	- GC/MS
Copper	- SSMS	Lanthanum	- SSMS	Bismuth	- SSMS		
Zinc	- SSMS	Cerium	- SSMS	Throium	- SSMS		
Gallium	- SSMS	Praesodymium	- SSMS	Uranium	- SSMS		
Germanium	- SSMS	Neodymium	- SSMS				

* = Carcinogens and High Probability Carcinogens listed by OAQPS.

** = Suspected Carcinogens identified by the National Academy of Sciences (24).

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2.2 DATA ACQUISITION AND REDUCTION

SASS testing was done in conjunction with a coal stoker fired boiler field test program that was awarded to the American Boiler Manufacturers Association (ABMA) and sponsored by the United States Department of Energy (DOE) and the United States Environmental Protection Agency (EPA). The program is directed by an ABMA Stoker Technical Committee which, in turn, has subcontracted the field test portion to KVB, Inc., of Minneapolis, Minnesota.

Sampling was conducted by KVB, Inc., in accordance with EPA Level 1 guidelines (23). Samples of flue gas and entrained particulate matter were obtained at the boiler outlet of each unit except for Site J where samples were obtained at the multiclone dust collector outlet. The sample catch from Test Site A was sent to A. D. Little, Inc., Cambridge, Massachusetts, for analysis of polynuclear aromatic hydrocarbons, and Acurex Corporation, Mountain View, California, for analysis of inorganic trace elements. All subsequent samples were sent to Battelle Columbus Laboratories, Columbus, Ohio, for analytical determination of inorganic trace elements and polynuclear aromatic hydrocarbons.

KVB, Inc., utilized the University of Minnesota computer for units conversion, statistical analysis, and tabulation of the data.

2.3 SUMMARY OF THE DATA

2.3.1 Inorganic Trace Elements and PAH Emissions

Table 2-2 lists the high, low, and average emissions of each inorganic trace element and PAH analyzed, for each of the three different kinds of stokers tested. All boiler emissions are given in the units of nonograms per Joule (ng/J) of heat input in this table.

Figure 2-1 graphically presents the averages of those inorganic trace element emissions which averaged 1 ng/J or more in at least one of the stoker categories. Silica and aluminum, which make up 70 to 80% of the ash in the coal, were found in the highest concentrations. Lithium, boron, sodium, magnesium, phosphorus, sulfur, potassium, calcium, titanium, chromium, manganese, iron, nickel, copper, strontium and barium combine to make up over 99% of the remaining ash in the coal. Emissions of the remaining inorganic elements were in much smaller concentrations.

Of the four carcinogens and high probability carcinogens among the inorganic trace elements, nickel was found in the highest concentrations averaging between 1.2 and 4.6 ng/J. The other three were found in significantly smaller concentrations; arsenic 0.046-0.44 ng/J, berryllium 0.004-0.015 ng/J, and cadmium 0.007-0.038 ng/J.

Figure 2-2 graphically presents the averages of those PAH emissions which averaged 10^{-4} ng/J or more in at least one of the stoker categories. This figure also includes four measured PAHs thought to be carcinogens. The PAHs with highest emissions are the three and four ring systems. Phenanthrene emissions are found to be the highest, followed by anthracene, methylanthracene, fluoranthene, and pyrene.

The appendices to this report have complete listings of the emissions for each inorganic trace element and PAH studied. Appendix A lists the emissions in terms of nanograms per joule of energy input, Appendix B in micrograms per dry standard cubic meter, and Appendix C in terms of grams per kilogram of fuel input. Emissions for each of the species are shown for each test run and are divided into five groups as collected in the SASS train. Particulate matter from the first 2 cyclones are combined, particulate matter from the last cyclone and

TABLE 2-2 Inorganic Trace Element and PAH Emissions

	RANGE IN DATA - - - - NG/J								
	SPREADER W/REINJ. FROM D.C.			SPREADER, NO REINJ FROM D.C.			MASS FIRED OVERFEED		
	LOW	AVERAGE	HIGH	LOW	AVERAGE	HIGH	LOW	AVERAGE	HIGH
LITHIUM	4.1E-2	1.0E+0	2.4E+0	5.0E-3	2.8E-2	8.7E-2	2.2E-3	1.7E-2	3.7E-2
BERYLLIUM	1.3E-4	1.5E-2	3.1E-2	1.8E-3	4.1E-3	9.3E-3	1.6E-3	5.6E-3	1.7E-2
BORON	2.8E-3	1.7E+0	6.1E+0	1.3E-2	7.6E-2	1.3E-1	1.4E-1	8.9E-1	2.3E+0
FLUORINE	6.9E-3	2.1E-2	2.8E-2	2.9E-3	4.6E-3	9.1E-3	2.1E-3	1.9E-2	5.7E-2
SODIUM	5.7E+0	2.8E+1	6.4E+1	1.7E-1	2.3E+0	8.9E+0	2.0E+0	3.5E+0	6.3E+0
MAGNESIUM	4.7E+0	1.6E+2	3.5E+2	2.0E-1	1.9E+0	7.2E+0	1.5E-1	1.0E+0	3.9E+0
ALUMINUM	3.2E+1	9.5E+2	2.0E+3	2.4E+1	1.5E+2	3.8E+2	3.7E+0	3.8E+1	1.4E+2
SILICON	7.7E+1	9.8E+2	2.0E+3	2.9E+1	1.2E+2	2.8E+2	4.5E+0	1.8E+1	4.7E+1
PHOSPHORUS	1.4E+0	7.5E+0	1.7E+1	2.2E-1	6.8E-1	1.0E+0	2.0E-1	7.0E-1	1.2E+0
SULFUR	1.3E+1	2.3E+1	3.8E+1	5.7E-1	7.8E+1	2.3E+2	4.7E+0	3.0E+2	1.5E+3
CHLORINE	7.5E-2	2.2E-1	3.1E-1	8.8E-4	8.5E-2	4.8E-1	3.7E-3	2.9E-2	1.3E-1
POTASSIUM	1.8E+0	1.1E+1	3.0E+1	2.3E+0	8.9E+0	2.4E+1	1.0E+0	7.2E+0	1.3E+1
CALCIUM	3.8E+0	3.4E+2	1.0E+3	1.7E+0	3.6E+0	5.5E+0	7.0E-1	2.9E+0	5.9E+0
SCANDIUM	9.1E-2	1.3E-1	2.4E-1	1.8E-2	3.8E-2	6.3E-2	7.3E-3	1.8E-2	2.9E-2
TITANIUM	3.7E-4	2.0E+1	4.9E+1	4.5E+0	1.6E+1	3.3E+1	1.2E+0	3.9E+0	1.0E+1
VANADIUM	2.8E-3	6.2E-1	1.4E+0	1.5E-1	4.1E-1	7.0E-1	3.2E-2	1.8E-1	3.5E-1
CHROMIUM	6.6E-3	1.4E+0	3.1E+0	1.7E-1	2.3E+0	3.6E+0	6.2E-1	6.2E+0	2.1E+1
MANGANESE	1.3E-2	2.6E+0	7.2E+0	4.4E-2	1.9E-1	4.1E-1	1.0E-1	1.1E+0	2.9E+0
IRON	3.7E-1	1.6E+2	5.5E+2	1.4E+1	3.7E+1	7.9E+1	9.9E+0	6.1E+1	1.5E+2
COBALT	2.3E-3	1.1E-1	2.8E-1	8.3E-2	1.6E-1	2.2E-1	1.8E-2	2.3E-1	6.7E-1
NICKEL	1.4E-2	3.6E+0	8.9E+0	2.8E-1	1.2E+0	2.6E+0	3.6E-1	4.6E+0	1.2E+1
COPPER	7.3E-3	5.3E-1	1.3E+0	2.7E-2	1.8E-1	4.3E-1	8.8E-2	1.2E+0	2.3E+0
ZINC	1.3E-2	2.9E-1	5.7E-1	1.1E-2	7.6E-2	2.9E-1	5.1E-2	9.2E-1	2.4E+0
GALLIUM	3.3E-2	1.0E-1	2.1E-1	9.5E-3	4.5E-2	1.4E-1	1.1E-2	9.0E-2	1.9E-1
GERMANIUM	8.6E-3	3.1E-2	6.2E-2	6.4E-3	3.2E-2	6.1E-2	1.6E-2	2.6E-1	9.2E-1
ARSENIC	1.2E-4	9.5E-2	3.6E-1	1.5E-2	4.6E-2	1.1E-1	2.5E-2	4.4E-1	1.1E+0
SELENIUM	4.8E-4	5.7E-2	1.4E-1	1.1E-2	3.0E-2	6.3E-2	2.4E-3	5.1E-2	2.8E-1
BROMINE	3.4E-3	5.2E-3	7.9E-3	4.1E-3	1.3E-2	2.8E-2	2.0E-3	3.7E-2	1.1E-1
RUBIDIUM	1.0E-1	5.8E-1	1.4E+0	1.9E-3	7.5E-2	2.4E+1	1.1E-2	8.5E-2	1.8E-1
STRONTIUM	1.0E+0	3.5E+1	1.4E+2	1.8E-1	7.8E-1	1.7E+0	8.6E-2	3.3E-1	1.0E+0
YTTRIUM	3.1E-2	1.5E-1	3.4E-1	5.4E-2	7.9E-2	1.1E-1	6.6E-3	7.7E-2	2.8E-1
ZIRCONIUM	1.8E-2	7.4E-1	2.1E+0	2.1E-1	3.7E-1	7.6E-1	1.7E-2	1.1E-1	2.5E-1
NIOBIUM	4.0E-3	5.3E-2	1.4E-1	1.1E-2	2.2E-2	4.0E-2	3.9E-3	1.5E-2	5.5E-2
MOLYBDENUM	3.7E-3	2.2E-1	6.0E-1	1.7E-2	7.5E-2	1.3E-1	6.8E-2	2.0E-1	3.4E-1
RUTHENIUM	1.7E-3	2.6E-3	3.4E-3	5.5E-4	1.1E-3	1.4E-3	3.0E-4	7.3E-3	2.1E-2
RHODIUM	6.5E-4	1.1E-3	2.1E-3	2.4E-4	6.1E-4	1.0E-3	1.8E-4	3.4E-3	8.6E-3
PALADIUM	3.1E-3	3.9E-3	4.9E-3	6.9E-4	1.5E-3	2.5E-3	5.6E-4	8.3E-3	2.2E-2
SILVER	1.2E-2	4.3E-1	2.4E+0	3.4E-4	3.9E-2	2.3E-1	1.3E-3	1.9E-2	7.0E-2
CADMIUM	1.8E-3	7.2E-3	1.5E-2	3.2E-3	1.1E-2	2.8E-2	5.3E-3	3.8E-2	1.3E-1
INDIUM	8.4E-4	2.7E-2	1.6E-1	3.4E-4	1.1E-3	2.3E-3	8.4E-4	5.5E-3	2.2E-2
TIN	6.4E-4	2.2E-2	4.3E-2	6.1E-3	1.8E-2	3.9E-2	1.7E-2	4.2E-2	9.1E-2
ANTIMONY	5.7E-3	9.1E-3	1.6E-2	2.6E-3	4.8E-3	1.1E-2	6.0E-3	2.0E-2	4.0E-2
TELLURIUM	5.1E-4	3.4E-3	5.6E-3	6.6E-4	2.5E-3	5.6E-3	3.9E-4	1.3E-2	4.4E-2
IODINE	7.3E-4	1.1E-3	1.5E-3	2.0E-3	3.6E-3	6.5E-3	6.7E-5	3.7E-3	8.3E-3
CESIUM	1.0E-2	6.0E-2	1.4E-1	1.3E-3	4.2E-3	7.3E-3	2.3E-3	3.8E-3	6.3E-3
BARIUM	1.4E-1	2.6E+1	1.4E+2	2.6E-1	4.6E-1	8.0E-1	3.9E-2	4.7E-1	2.0E+0
LANTHANUM	9.2E-3	1.5E-1	3.5E-1	1.7E-2	3.5E-2	6.4E-2	2.5E-3	1.3E-2	2.8E-2
CERIUM	2.6E-2	2.4E-1	4.9E-1	2.3E-2	8.3E-2	1.6E-1	7.1E-3	6.2E-2	2.6E-1
PRASEODYMIUM	2.3E-3	2.4E-2	4.9E-2	7.1E-3	1.5E-2	2.2E-2	2.8E-3	7.3E-3	1.8E-2
NEODYMIUM	7.9E-3	8.6E-2	2.8E-1	2.3E-2	3.9E-2	7.9E-2	5.5E-3	3.6E-2	7.1E-2
SAMARIUM	4.6E-3	1.9E-2	3.5E-2	5.5E-3	1.2E-2	1.7E-2	3.0E-3	1.4E-2	2.9E-2
EUROPIUM	2.9E-3	1.2E-2	3.4E-2	1.9E-3	2.9E-3	4.3E-3	7.4E-4	8.9E-3	1.8E-2

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

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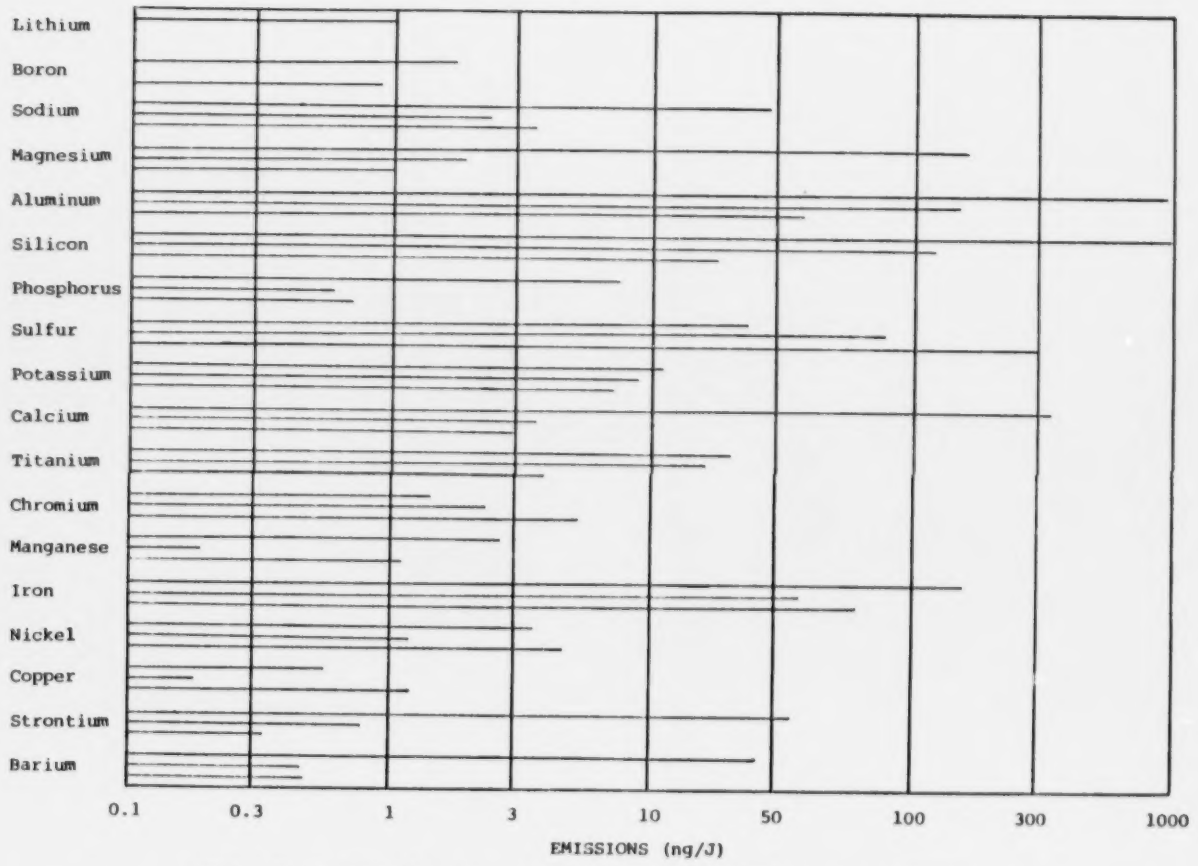
TABLE 2-2 (con't)

RANGE IN DATA - - - - NG/J

	SPREADER W/REINJ. FROM D.C.			SPREADER, NO REINJ FROM D.C.			MASS FIRED OVERFEED		
	LOW	AVERAGE	HIGH	LOW	AVERAGE	HIGH	LOW	AVERAGE	HIGH
GADOLINIUM	3.5E-3	1.9E-2	6.8E-2	5.6E-3	9.8E-3	1.6E-2	1.5E-3	1.3E-2	2.8E-2
TERBIUM	1.5E-3	4.1E-3	7.8E-3	1.0E-3	1.5E-3	2.2E-3	4.4E-4	3.3E-3	7.9E-3
DYSPROSIUM	3.6E-3	1.8E-2	3.5E-2	6.7E-3	1.7E-2	2.8E-2	1.3E-3	1.3E-2	2.8E-2
HOLMIUM	1.5E-3	3.2E-3	4.3E-3	1.8E-3	2.5E-3	3.3E-3	6.7E-4	3.4E-3	8.5E-3
ERBIUM	4.4E-3	6.1E-3	7.1E-3	3.6E-3	5.8E-3	9.5E-3	1.0E-3	1.0E-2	2.6E-2
THULIUM	6.7E-4	6.8E-3	1.2E-2	2.4E-4	7.1E-4	1.3E-3	1.2E-4	8.7E-3	1.5E-2
YTTERBIUM	3.4E-3	5.6E-3	7.2E-3	3.1E-3	4.2E-3	7.2E-3	1.0E-3	9.3E-3	2.3E-2
LUTETIUM	5.8E-4	1.1E-3	1.5E-3	3.4E-4	4.2E-4	5.5E-4	1.2E-4	2.8E-3	8.5E-3
HAFNIUM	7.3E-4	4.1E-3	7.8E-3	1.0E-3	3.6E-3	6.6E-3	7.6E-4	8.7E-3	2.2E-2
TANTALUM	1.2E-2	1.8E-2	2.0E-2	2.2E-3	3.7E-3	6.9E-3	1.0E-3	1.7E-2	3.8E-2
TUNGSTEN	5.2E-3	8.2E-3	1.3E-2	8.8E-4	2.6E-3	4.2E-3	5.7E-3	1.6E-2	3.2E-2
RHENIUM	2.3E-3	2.4E-3	2.7E-3	6.6E-4	8.8E-4	1.2E-3	2.4E-4	6.1E-3	1.7E-2
OSMIUM	1.7E-3	4.3E-3	6.8E-3	7.2E-4	1.2E-3	2.5E-3	3.3E-4	8.6E-3	2.1E-2
IRIDIUM	2.1E-3	2.8E-3	3.4E-3	3.6E-4	7.2E-4	1.2E-3	2.4E-4	6.1E-3	1.7E-2
PLATINUM	1.7E-3	1.1E-2	2.8E-2	3.6E-4	7.5E-4	1.2E-3	3.9E-4	9.3E-3	2.1E-2
GOLD	5.6E-4	2.7E-3	6.0E-3	2.4E-4	4.4E-4	7.6E-4	8.9E-5	3.4E-3	8.5E-3
MERCURY	3.3E-4	1.8E-3	7.2E-3	5.5E-4	1.3E-3	2.8E-3	4.8E-6	5.8E-4	9.2E-4
THALLIUM	3.3E-4	1.1E-2	1.6E-2	4.8E-3	1.1E-2	2.5E-2	2.9E-2	4.7E-2	6.7E-2
LEAD	1.3E-2	1.6E-1	3.7E-1	4.5E-2	8.4E-2	1.4E-1	1.9E-2	2.9E-1	6.6E-1
BISMUTH	1.0E-3	6.4E-3	1.2E-2	2.2E-4	1.0E-3	1.8E-3	8.4E-4	5.3E-3	9.0E-3
THORIUM	3.1E-3	7.8E-3	1.4E-2	4.6E-3	7.4E-3	1.3E-2	1.1E-3	8.6E-3	2.2E-2
URANIUM	3.9E-3	8.0E-3	1.5E-2	5.5E-3	1.0E-2	1.7E-2	3.1E-3	7.4E-3	1.4E-2
PHENANTHRENE	3.0E-4	3.8E-3	8.6E-3	1.7E-4	2.2E-3	1.8E-2	1.8E-4	4.6E-3	3.0E-2
ANTHRACENE	1.6E-5	1.2E-4	2.7E-4	4.5E-5	7.7E-5	1.3E-4	3.1E-5	4.3E-3	2.9E-2
METHYLANTHRACENES/PHENANTHRENES	2.5E-5	2.7E-4	8.1E-4	7.0E-5	1.0E-3	5.1E-3	1.1E-4	3.9E-4	1.1E-3
FLUORANTHENE	2.6E-5	1.0E-3	2.4E-3	4.1E-5	4.7E-4	2.2E-3	2.3E-5	4.3E-3	2.9E-2
PYRENE	3.5E-5	3.3E-4	6.7E-4	2.8E-5	1.3E-4	2.2E-4	5.9E-5	1.7E-4	3.5E-4
METHYLPYRENE/FLUORANTHENE	1.2E-5	8.2E-5	2.3E-4	2.5E-5	1.0E-4	3.5E-4	1.4E-5	9.3E-5	1.2E-4
BENZO(C)PHENANTHRENE	1.0E-5	3.0E-5	5.4E-5	1.4E-5	2.9E-5	4.0E-5	3.3E-5	4.6E-5	5.9E-5
BENZ(A)ANTHRACENE	2.0E-5	3.9E-5	4.7E-5	1.0E-5	1.7E-5	3.0E-5	1.4E-5	3.6E-5	7.9E-5
CHRYSENE	3.1E-5	6.2E-5	1.2E-4	1.3E-5	5.7E-5	1.1E-4	1.4E-5	5.8E-5	1.4E-4
METHYLCHRYSENES	1.0E-5	1.9E-5	2.6E-5	1.0E-5	2.2E-5	5.1E-5	1.2E-5	2.8E-5	6.1E-5
DIMETHYLBENZANTHRACENES	1.0E-5	1.0E-5	1.0E-5						
BENZOFLUORANTHENES	1.0E-5	5.8E-5	1.5E-4	1.3E-5	2.9E-5	6.7E-5	1.3E-5	4.4E-5	1.3E-4
BENZO(E)PYRENE	1.0E-5	1.7E-5	2.2E-5	1.0E-5	2.4E-5	5.1E-5	1.2E-5	2.2E-5	5.0E-5
BENZO(A)PYRENE	1.0E-5	1.6E-5	2.3E-5	1.0E-5	1.0E-5	1.0E-5	1.4E-5	2.1E-5	2.8E-5
PERYLENE	1.0E-5	1.4E-5	2.8E-5	1.0E-5	1.2E-5	1.6E-5	1.4E-5	2.1E-5	2.8E-5
INDENO(1,2,3-CD)PYRENE	1.1E-5	2.1E-5	3.1E-5	1.3E-5	3.9E-5	1.0E-4	2.6E-5	2.9E-5	3.3E-5
BENZO(G,H,I)PERYLENE	1.1E-5	1.2E-5	1.2E-5	1.3E-5	4.6E-5	1.4E-4	1.9E-5	4.4E-5	8.1E-5
3-METHYLCHOLANTHRENE							1.4E-5	1.4E-5	1.4E-5
DIBENZPYRENES				1.0E-5	1.8E-5	3.2E-5	2.2E-5	2.2E-5	2.2E-5
CORONENE				1.0E-5	2.7E-5	5.4E-5	1.1E-5	1.3E-5	1.4E-5

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.



Upper Bar = Spreader Stokers with Reinjection from the Dust Collector
Middle Bar = Spreader Stokers without Reinjection from the Dust Collector
Lower Bar = Mass Fired Overfeed Stokers

FIGURE 2-1 INORGANIC TRACE ELEMENT EMISSION AVERAGES, ng/J

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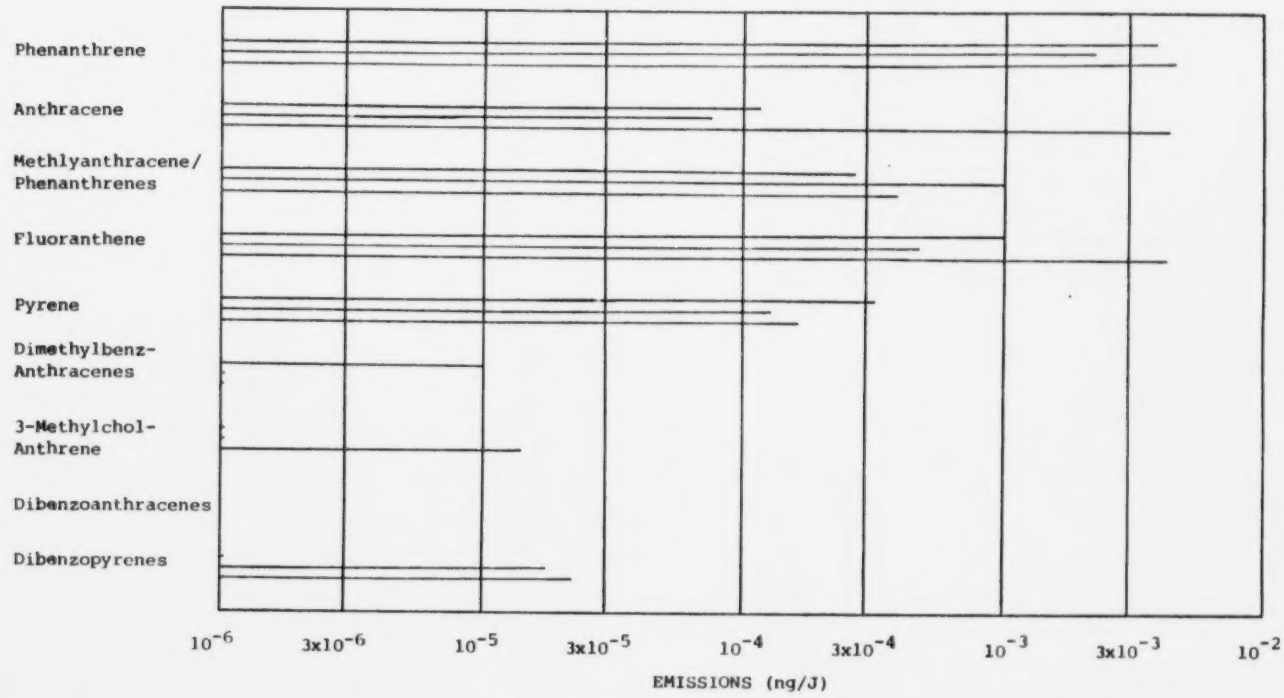

Upper Bar = Spreader Stoker with Reinjection from the Dust Collector
Middle Bar = Spreader Stoker without Reinjection from the Dust Collector
Lower Bar = Mass Fired Overfeed Stokers

FIGURE 2-2 PAH EMISSION AVERAGES, ng/J

the filter catch are combined as are the condensate and impingers. The XAD-2 and wash analysis are reported separately. Site A inorganic samples were analyzed by a different contractor and the emissions are reported only as total emissions rather than broken down as collected in the SASS train.

Included with the actual test results are predicted emissions for the addition of 3 different pollution control devices, and attempted correlations with the emissions and selected boiler parameters.

2.3.2 Inorganic Trace Elements and PAH Emissions by Stoker Type

Table 2-2 (see Section 2.3.1) lists the inorganic trace elements and PAH emissions by the three different stoker types tested: spreader stokers with reinjection from the dust collector, spreader stokers without reinjection from the dust collector, and mass-fired overfeed stokers. During this test program, it was learned that spreader stokers have significantly higher boiler outlet particulate mass loadings than do mass-fired overfeed stokers. It was also learned that spreader stokers with flyash reinjection from the dust collector have significantly higher boiler outlet particulate mass loadings than spreader stokers without reinjection from the dust collectors. This is also evident for the SASS testing portion of the program. Boiler outlet emissions from spreader stokers with reinjection from the dust collector are definitely much higher than emissions from the other two types of stokers tested, on a mass basis. Emissions from spreader stokers without reinjection from the dust collector, and from mass-fired overfeed stokers appear to be approximately the same. As previously noted, these emissions were obtained upstream of any emission control equipment except for tests at Site J. Dust collectors would remove much of the particulate material thus reducing some of the organic and inorganic species entering the atmosphere.

2.3.3 Breakdown of Emissions by Location in the SASS Train

The location where emissions were trapped in the SASS train is an indication of what form they were in and how they can be controlled. For example, the SASS cyclones remove the large particles which would be removed by mechanical dust collectors. The filter removes finer particles which are less efficiently

collected, and then only by high-efficiency collectors such as baghouses and ESPs. The condensate, impinger, and XAD-2 remove species which are most likely to pass through emission control equipment and be emitted into the atmosphere.

Tables 2-3, 2-4, and 2-5 show a breakdown of how the inorganic trace elements and PAHs were distributed through the SASS train for the three types of stokers tested.

For spreader stokers with reinjection from the dust collector, 80 to 100% of the inorganic trace element emissions were usually found in the 10-micrometer and 3-micrometer cyclone catches. For spreader stokers without reinjection from the dust collector, 70 to 90% of the inorganic trace element emissions were found in the 18.5-micrometer and 5.9-micrometer cyclone catches, while a slightly larger fraction was found in the 1.4-micrometer cyclone catch and filter catch. The 18.5-micrometer and 5.9-micrometer cyclone catches from the mass-fired overfeed stokers made up a significantly smaller percentage of the total emissions, (50-80%), than the two types of spreader stokers tested. The difference for the mass-fired overfeed stokers was made up not only in the 1.4-micrometer cyclone catch and filter catch emissions but also in emissions found in the condensate and impinger catch. These types of emissions indicate a more volatile or complex form.

A large percentage of inorganic trace element emissions were expected to be found in the two largest cyclones, since they make up the largest portion of the sample caught by the SASS train. The difference in the percentages of these emissions for the three different kinds of stokers tested were also expected since particulate loading is a function of stoker type.

The largest percentages of PAH emissions were found in the XAD-2 organic absorbent as expected, with the remaining portion found in the XAD-2 wash and the condensate.

2.3.4 Inorganic Trace Element Input/Output Ratios

Trace element input/output ratios were determined where data was available. The input/output ratios are the ratio of the elements emission rate at the boiler outlet to its input rate with the coal. This does not constitute a mass balance because it does not include the bottom ash or any hopper ash upstream of the sampling point. Thus, the input/output ratios should be less than or equal to one if the data are accurate.

TABLE 2-3

PARTICLE SIZE DISTRIBUTION FOR SPREADER W/REINJ. FROM D.C.

SPECIES	10 μM + 3 μM CYCLONE	1 μM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2
LITHIUM	1.0E+0	2.7E-2	3.4E-4	4.3E-3
BERYLLIUM	8.8E-1	1.0E-1	6.1E-5	2.7E-3
BORON	9.4E-1	3.2E-2	1.0E-2	7.9E-3
FLUORINE	4.6E-1	1.0E-1	5.8E-2	3.8E-1
SODIUM	8.3E-1	7.3E-2	2.3E-2	7.4E-2
MAGNESIUM	1.0E+0	2.4E-2	3.7E-4	1.0E-2
ALUMINUM	1.0E+0	1.0E-2	6.7E-5	5.7E-4
SILICON	1.0E+0	1.2E-2	2.7E-4	8.9E-4
PHOSPHORUS	6.1E-1	6.0E-2	1.5E-3	3.3E-1
SULFUR	4.9E-1	1.3E-1	3.2E-1	5.8E-2
CHLORINE	4.7E-1	1.4E-2	3.7E-2	4.8E-1
POTASSIUM	9.1E-1	5.3E-2	1.6E-3	3.6E-2
CALCIUM	1.0E+0	1.5E-2	5.9E-4	3.2E-3
SCANDIUM	8.9E-1	1.1E-1	6.0E-4	3.2E-3
TITANIUM	9.4E-1	5.6E-2	3.5E-4	5.9E-4
VANADIUM	9.2E-1	7.3E-2	7.1E-3	3.2E-4
CHROMIUM	1.7E-1	2.3E-2	7.0E-1	9.3E-2
MANGANESE	8.9E-1	3.8E-2	6.7E-2	1.3E-3
IRON	9.5E-1	2.6E-2	2.1E-2	5.8E-3
COBALT	4.3E-1	1.3E-1	3.7E-1	5.9E-2
NICKEL	6.9E-2	7.2E-3	7.8E-1	1.4E-1
COPPER	5.3E-1	2.3E-1	4.9E-2	1.8E-1
ZINC	2.7E-1	5.9E-1	1.0E-1	2.3E-2
GALLIUM	6.0E-1	3.9E-1	5.6E-3	3.2E-3
GERMANIUM	7.9E-1	8.3E-2	1.1E-1	2.2E-2
ARSENIC	6.1E-1	3.9E-1	5.6E-3	2.4E-3
SELENIUM	6.9E-1	6.8E-2	2.1E-1	3.5E-2
BROMINE	6.6E-1	1.3E-1	6.0E-2	1.5E-1

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

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TABLE 2-3 (CON'T)

PARTICLE SIZE DISTRIBUTION FOR SPREADER W/REINJ. FROM D.C.

SPECIES	10 μM + 3 μM CYCLONE	1 μM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2
RUBIDIUM	9.4E-1	5.9E-2	3.4E-4	1.4E-3
STRONTIUM	1.0E+0	1.3E-2	4.6E-5	5.3E-5
YTTRIUM	1.0E+0	4.5E-2	3.7E-4	3.5E-3
ZIRCONIUM	1.0E+0	2.2E-2	1.1E-3	1.4E-3
NIOBIUM	9.4E-1	3.8E-2	1.6E-2	1.0E-2
MOLYBDENUM	2.4E-1	7.0E-2	6.8E-1	8.9E-3
RUTHENIUM	5.4E-1	2.4E-2	3.1E-2	4.0E-1
RHODIUM	5.8E-1	4.9E-2	2.3E-2	3.5E-1
PALADIUM	6.6E-1	1.9E-2	4.3E-2	2.7E-1
SILVER	8.4E-1	6.8E-2	9.1E-2	1.6E-3
CADMIUM	4.2E-1	1.1E-1	1.1E-1	2.8E-1
INDIUM	3.2E-2	9.2E-3	1.1E-3	1.0E+0
TIN	2.5E-1	4.9E-1	2.1E-1	3.6E-2
ANTIMONY	2.7E-1	4.2E-1	2.1E-2	5.6E-2
TELLURIUM	4.6E-1	1.0E-1	2.2E-2	3.8E-1
IODINE	5.3E-1	6.1E-2	4.3E-2	3.7E-1
CESIUM	8.8E-1	6.9E-2	2.3E-3	4.4E-2
BARIUM	1.0E+0	1.2E-2	5.3E-5	3.1E-5
LANTHANUM	1.0E+0	4.4E-2	1.3E-4	3.5E-3
CERIUM	1.0E+0	4.7E-2	1.9E-4	2.3E-3
PRASEODYMIUM	9.2E-1	5.9E-2	1.5E-3	2.2E-2
NEODYMIUM	9.3E-1	5.7E-2	9.4E-4	1.2E-2
SAMARIUM	8.5E-1	9.0E-2	4.1E-3	5.6E-2
EUROPIUM	8.7E-1	5.4E-2	6.6E-3	6.8E-2
GADOLINIUM	8.7E-1	6.6E-2	3.5E-3	6.2E-2
TERBIUM	8.0E-1	5.8E-2	8.9E-3	1.3E-1
DYSPROSIUM	8.7E-1	6.8E-2	4.3E-3	5.9E-2
HOLMIUM	7.4E-1	8.6E-2	1.1E-2	1.7E-1

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

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TABLE 2-3 (CON'T)

PARTICLE SIZE DISTRIBUTION FOR SPREADER W/REINJ. FROM D.C.

SPECIES	10 μM + 3 μM CYCLONE	1 μM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH
ERBIUM	7.2E-1	8.8E-2	1.3E-2	1.8E-1	
THULIUM	1.3E-1	1.1E-2	4.6E-2	8.1E-1	
YTTERBIUM	7.1E-1	8.5E-2	1.4E-2	1.9E-1	
LUTETIUM	4.4E-1	2.8E-2	3.4E-2	5.0E-1	
HAFNIUM	6.5E-1	2.8E-2	1.7E-2	3.1E-1	
TANTALUM	5.1E-1	4.7E-3	3.6E-2	4.5E-1	
TUNGSTEN	3.2E-1	2.3E-1	1.1E-1	3.4E-1	
RHENIUM	5.2E-1	1.2E-2	2.2E-2	4.5E-1	
OSMIUM	3.3E-1	9.2E-3	3.6E-2	6.2E-1	
IRIDIUM	5.1E-1	1.1E-2	2.8E-2	4.5E-1	
PLATINUM	1.7E-1	3.5E-3	7.3E-3	8.2E-1	
GOLD	1.8E-1	6.5E-3	1.5E-2	8.0E-1	
MERCURY	8.4E-2	1.2E-2	1.3E-1	7.3E-1	
THALLIUM	1.2E-1	6.6E-1	4.3E-3	2.0E-1	
LEAD	1.0E-1	8.6E-1	2.8E-3	1.3E-2	
BISMUTH	7.4E-2	4.2E-1	4.1E-3	1.2E-1	
THORIUM	7.8E-1	8.2E-2	5.2E-3	1.4E-1	
URANIUM	6.3E-1	2.4E-1	5.1E-3	1.3E-1	
PHENANTHRENE	1.1E-1	3.2E-2	1.3E-2	8.0E-1	4.9E-2
ANTHRACENE	0.0	1.4E-2	2.8E-2	8.9E-1	6.4E-2
METHYLANTHRACENES/PHENANTHRENES	2.7E-1	4.9E-2	8.0E-2	5.2E-1	8.3E-2
FLUORANTHENE	4.2E-1	3.9E-2	4.3E-2	4.6E-1	3.7E-2
PYRENE	2.7E-1	8.2E-2	1.5E-1	4.2E-1	8.3E-2
METHYLPYRENE/FLUORANTHENE	4.8E-1	5.7E-2	5.6E-2	3.2E-1	8.4E-2
BENZO(C)PHENANTHRENE	2.5E-1	6.6E-2	1.9E-1	3.0E-1	1.9E-1
BENZ(A)ANTHRACENE	2.6E-1	1.9E-1	2.3E-1	1.3E-1	1.9E-1
CHRYSENE	1.5E-1	9.3E-2	2.1E-1	3.7E-1	1.8E-1
METHYLCHRYSENES	0.0	0.0	3.9E-1	6.1E-1	0.0
DIMETHYLBENZANTHRACENES	0.0	0.0	0.0	1.0E+0	0.0
BENZOFLUORANTHENES	0.0	0.0	3.4E-2	1.5E-1	8.2E-1
BENZO(E)PYRENE	0.0	0.0	1.9E-1	6.0E-1	2.1E-1
BENZO(A)PYRENE	0.0	1.8E-1	3.3E-1	3.1E-1	1.8E-1
PERYLENE	0.0	0.0	2.4E-1	4.8E-1	2.8E-1
INDENO(1,2,3-CD)PYRENE	0.0	0.0	2.7E-1	7.3E-1	0.0
BENZO(G,H,I)PERYLENE	0.0	3.4E-1	3.2E-1	0.0	3.4E-1

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

TABLE 2-4

PARTICLE SIZE DISTRIBUTION FOR SPREADER,NO REINJ FROM D.C.

SPECIES	18.5 μM +5.9 μM CYCLONE	1.4 μM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2
LITHIUM	8.1E-1	1.9E-1	3.2E-3	0.0
BERYLLIUM	8.7E-1	1.3E-1	5.3E-3	0.0
BORON	3.9E-1	1.9E-1	4.2E-1	0.0
FLUORINE	6.0E-1	2.1E-1	1.9E-1	0.0
SODIUM	7.0E-1	2.5E-1	4.6E-2	0.0
MAGNESIUM	8.8E-1	1.1E-1	6.5E-3	0.0
ALUMINUM	9.3E-1	7.2E-2	4.2E-4	0.0
SILICON	9.1E-1	8.6E-2	1.2E-3	0.0
PHOSPHORUS	7.6E-1	2.4E-1	5.7E-3	0.0
SULFUR	1.5E-2	7.3E-3	1.0E+0	0.0
CHLORINE	3.2E-2	8.3E-3	1.0E+0	0.0
POTASSIUM	8.2E-1	1.8E-1	1.3E-3	0.0
CALCIUM	7.2E-1	2.5E-1	2.9E-2	0.0
SCANDIUM	8.4E-1	1.5E-1	7.9E-3	0.0
TITANIUM	9.1E-1	9.3E-2	6.6E-4	0.0
VANADIUM	8.7E-1	1.2E-1	1.0E-2	0.0
CHROMIUM	7.0E-2	6.3E-2	8.7E-1	0.0
MANGANESE	3.2E-1	5.4E-2	6.2E-1	0.0
IRON	7.2E-1	8.3E-2	1.9E-1	0.0
COBALT	5.0E-1	2.2E-1	2.8E-1	0.0
NICKEL	9.0E-2	7.4E-2	8.4E-1	0.0
COPPER	5.6E-1	4.1E-1	3.2E-2	0.0
ZINC	4.8E-1	4.6E-1	6.4E-2	0.0
GALLIUM	1.9E-1	8.0E-1	5.6E-3	0.0
GERMANIUM	3.7E-1	5.5E-1	8.4E-2	0.0
ARSENIC	5.6E-1	4.3E-1	1.2E-2	0.0
SELENIUM	8.9E-1	3.8E-2	7.4E-2	0.0
BROMINE	4.7E-1	1.2E-1	4.1E-1	0.0

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

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TABLE 2-4 (CON'T)

PARTICLE SIZE DISTRIBUTION FOR SPREADER,NO REINJ FROM D.C.

SPECIES	18.5 μM +5.9 μM CYCLONE	1.4 μM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2
RUBIDIUM	8.1E-1	1.9E-1	4.5E-3	0.0
STRONTIUM	8.9E-1	1.0E-1	1.2E-3	0.0
YTTRIUM	8.2E-1	1.7E-1	2.7E-3	0.0
ZIRCONIUM	8.8E-1	1.2E-1	2.7E-3	0.0
NIOBIUM	7.5E-1	1.4E-1	1.2E-1	0.0
MOLYBDENUM	1.6E-1	1.7E-1	6.7E-1	0.0
RUTHENIUM	6.0E-1	7.3E-2	3.3E-1	0.0
RHODIUM	4.9E-1	3.4E-2	4.8E-1	0.0
PALADIUM	6.5E-1	5.4E-2	3.0E-1	0.0
SILVER	1.3E-2	1.3E-2	1.0E+0	0.0
CADMIUM	4.6E-1	2.5E-2	5.1E-1	0.0
INDIUM	3.7E-1	1.4E-1	5.0E-1	0.0
TIN	1.7E-1	4.1E-1	4.2E-1	0.0
ANTIMONY	2.6E-1	5.5E-1	2.0E-1	0.0
TELLURIUM	5.1E-1	5.0E-2	4.4E-1	0.0
IODINE	8.4E-1	4.0E-2	1.2E-1	0.0
CESIUM	7.3E-1	2.6E-1	5.2E-3	0.0
BARIUM	7.6E-1	2.3E-1	8.1E-3	0.0
LANTHANUM	8.4E-1	1.6E-1	5.0E-3	0.0
CERIUM	8.1E-1	1.9E-1	4.3E-4	0.0
PRASEODYMIUM	8.1E-1	1.8E-1	8.2E-3	0.0
NEODYMIUM	7.8E-1	2.1E-1	8.6E-3	0.0
SAMARIUM	8.3E-1	1.4E-1	2.8E-2	0.0
EUROPIUM	7.8E-1	1.7E-1	5.8E-2	0.0
GADOLINIUM	7.7E-1	2.1E-1	1.8E-2	0.0
TERBIUM	7.7E-1	1.6E-1	6.2E-2	0.0
DYSPROSIUM	8.5E-1	1.3E-1	1.4E-2	0.0
HOLMIUM	7.8E-1	1.7E-1	5.5E-2	0.0

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

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TABLE 2-4 (CON'T)

PARTICLE SIZE DISTRIBUTION FOR SPREADER,NO REINJ FROM D.C.

SPECIES	18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH
ERBIUM	8.8E-1	8.0E-2	3.7E-2	0.0	
THULIUM	5.5E-1	7.4E-2	3.7E-1	0.0	
YTTERBIUM	8.9E-1	6.3E-2	5.2E-2	0.0	
LUTETIUM	6.7E-1	1.0E-1	2.3E-1	0.0	
HAFNIUM	7.8E-1	1.4E-1	8.3E-2	0.0	
TANTALUM	7.2E-1	4.0E-2	2.4E-1	0.0	
TUNGSTEN	4.6E-1	2.0E-1	3.1E-1	0.0	
RHENIUM	7.3E-1	5.8E-2	2.1E-1	0.0	
OSMIUM	7.1E-1	4.7E-2	2.5E-1	0.0	
IRIDIUM	6.9E-1	4.4E-2	2.6E-1	0.0	
PLATINUM	6.8E-1	4.8E-2	2.7E-1	0.0	
GOLD	6.9E-1	4.2E-2	2.7E-1	0.0	
MERCURY	1.4E-1	2.6E-2	2.8E-1	5.5E-1	
THALLIUM	4.3E-1	5.4E-1	2.9E-2	0.0	
LEAD	3.0E-1	6.8E-1	1.9E-2	0.0	
BISMUTH	3.3E-1	5.5E-1	1.2E-1	0.0	
THORIUM	8.5E-1	1.3E-1	2.6E-2	0.0	
URANIUM	5.5E-1	4.4E-1	8.8E-3	0.0	
PHENANTHRENE	1.1E-2	1.7E-2	1.4E-2	9.4E-1	1.9E-2
ANTHRACENE	2.1E-1	2.4E-1	7.2E-2	3.1E-1	1.6E-1
METHYLANTHRACENES/PHENANTHRENES	2.1E-3	1.4E-2	3.7E-3	1.0E+0	2.1E-2
FLUORANTHENE	3.9E-2	3.5E-2	1.3E-2	8.8E-1	3.4E-2
PYRENE	1.4E-1	1.3E-1	4.3E-2	5.0E-1	2.0E-1
METHYLPYRENE/FLUORANTHENE	0.0	1.2E-1	0.0	7.9E-1	8.5E-2
BENZO(C)PHENANTHRENE	0.0	3.5E-1	1.2E-1	3.1E-1	2.2E-1
BENZ(A)ANTHRACENE	0.0	2.9E-1	0.0	5.7E-1	1.4E-1
CHRYSENE	2.0E-1	2.3E-1	1.5E-1	2.8E-1	1.5E-1
METHYLCHRYSENES	0.0	2.4E-1	1.0E-1	6.6E-1	0.0
BENZOFLUORANTHENES	0.0	4.8E-1	0.0	3.8E-1	1.4E-1
BENZO(E)PYRENE	0.0	4.5E-1	0.0	5.5E-1	0.0
BENZO(A)PYRENE	0.0	0.0	0.0	1.0E+0	0.0
PERYLENE	0.0	0.0	0.0	1.0E+0	0.0
INDENO(1,2,3-CD)PYRENE	2.6E-1	2.6E-1	1.2E-1	2.7E-1	8.1E-2
BENZO(G,H,I)PERYLENE	0.0	3.1E-1	0.0	4.1E-1	2.8E-1
DIBENZPYRENES	0.0	5.9E-1	0.0	1.8E-1	2.2E-1
CORONENE	0.0	3.9E-1	0.0	6.1E-1	0.0

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

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TABLE 2-5

PARTICLE SIZE DISTRIBUTION FOR MASS FIRED OVERFEED

SPECIES	18.5 μM +5.9 μM CYCLONE	1.4 μM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2
LITHIUM	5.1E-1	4.1E-1	6.4E-2	1.8E-2
BERYLLIUM	7.6E-1	2.3E-1	1.0E-2	6.0E-3
BORON	6.0E-2	7.9E-2	8.6E-1	4.1E-3
FLUORINE	5.2E-2	2.4E-2	6.2E-1	3.1E-1
SODIUM	2.1E-1	4.5E-1	1.7E-1	1.6E-1
MAGNESIUM	7.7E-1	5.9E-2	4.3E-2	1.3E-1
ALUMINUM	9.4E-1	5.0E-2	1.0E-2	2.7E-3
SILICON	8.2E-1	1.3E-1	4.1E-2	5.7E-3
PHOSPHORUS	3.6E-1	6.0E-1	3.1E-2	3.6E-3
SULFUR	6.3E-3	4.5E-3	1.0E+0	7.4E-3
CHLORINE	5.1E-2	1.7E-1	2.6E-1	5.2E-1
POTASSIUM	4.8E-1	5.0E-1	1.5E-2	2.3E-3
CALCIUM	5.0E-1	1.9E-1	2.7E-1	4.0E-2
SCANDIUM	5.4E-1	7.5E-2	2.1E-1	1.7E-1
TITANIUM	8.4E-1	1.2E-1	3.6E-2	1.3E-3
VANADIUM	6.0E-1	3.0E-1	1.0E-1	2.7E-3
CHROMIUM	2.5E-2	8.7E-3	9.3E-1	3.4E-2
MANGANESE	1.0E-1	1.5E-2	8.9E-1	2.4E-4
IRON	4.2E-1	7.4E-2	4.9E-1	1.2E-2
COBALT	7.2E-2	1.0E-1	8.1E-1	2.1E-2
NICKEL	1.9E-2	1.8E-2	1.0E+0	1.2E-2
COPPER	1.0E-1	2.6E-1	7.8E-2	5.7E-1
ZINC	1.0E-1	8.5E-1	4.8E-2	2.2E-3
GALLIUM	3.2E-1	6.3E-1	4.8E-2	7.0E-3
GERMANIUM	1.3E-1	7.8E-1	8.8E-2	7.2E-3
ARSENIC	3.1E-1	4.0E-1	2.8E-1	3.2E-3
SELENIUM	2.7E-2	1.1E-2	9.2E-1	4.1E-2
BROMINE	6.0E-2	1.3E-1	6.0E-1	2.0E-1

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

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TABLE 2-5 (CON'T)

PARTICLE SIZE DISTRIBUTION FOR MASS FIRED OVERFEED

SPECIES	18.5 μM +5.9 μM CYCLONE	1.4 μM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH
RUBIDIUM	3.8E-1	5.8E-1	3.3E-2	2.8E-3	
STRONTIUM	9.1E-1	7.6E-2	1.6E-2	5.6E-4	
YTTRIUM	8.6E-1	1.1E-1	1.8E-2	7.0E-3	
ZIRCONIUM	8.8E-1	7.3E-2	3.1E-2	1.3E-2	
NIOBIUM	4.0E-1	3.2E-2	5.3E-1	3.7E-2	
MOLYBDENUM	5.8E-2	1.2E-1	7.9E-1	3.9E-2	
RUTHENIUM	1.7E-2	4.9E-3	5.9E-1	3.9E-1	
RHODIUM	2.4E-2	1.2E-2	5.4E-1	4.2E-1	
PALADIUM	3.6E-2	1.0E-2	6.1E-1	3.5E-1	
SILVER	5.7E-2	7.1E-2	5.7E-1	3.0E-1	
CADMIUM	2.7E-2	6.9E-2	7.0E-1	2.0E-1	
INDIUM	1.8E-2	8.5E-2	6.5E-1	2.5E-1	
TIN	1.0E-1	4.8E-1	3.4E-1	7.3E-2	
ANTIMONY	1.4E-1	7.2E-1	7.3E-2	6.4E-2	
TELLURIUM	2.2E-2	9.4E-3	7.3E-1	2.4E-1	
IODINE	4.9E-2	1.9E-2	4.5E-1	4.8E-1	
CESIUM	3.0E-1	4.9E-1	1.0E-1	1.1E-1	
BARIUM	7.6E-1	2.2E-1	2.4E-2	4.5E-3	
LANTHANUM	7.4E-1	7.7E-2	7.6E-2	1.1E-1	
CERIUM	9.4E-1	4.8E-2	7.4E-3	6.6E-3	
PRASEODYMIUM	6.4E-1	4.3E-2	1.4E-1	1.8E-1	
NEODYMIUM	5.5E-1	4.8E-2	2.4E-1	1.6E-1	
SAMARIUM	3.4E-1	3.1E-2	4.3E-1	2.0E-1	
EUROPIUM	3.1E-1	1.6E-2	3.5E-1	3.2E-1	
GADOLINIUM	3.7E-1	2.2E-2	3.9E-1	2.2E-1	
TERBIUM	2.2E-1	1.4E-2	3.7E-1	3.9E-1	
DYSPROSIUM	3.5E-1	2.1E-2	4.0E-1	2.3E-1	
HOLMIUM	2.2E-1	1.9E-2	3.9E-1	3.7E-1	

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

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TABLE 2-5 (CON'T)

PARTICLE SIZE DISTRIBUTION FOR MASS FIRED OVERFEED

SPECIES	18.5 μM +5.9 μM CYCLONE	1.4 μM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH
ERBIUM	2.4E-1	1.2E-2	4.8E-1	2.7E-1	
THULIUM	2.6E-2	2.2E-3	5.4E-1	4.3E-1	
YTTERBIUM	2.1E-1	2.1E-2	4.7E-1	3.1E-1	
LUTETIUM	7.7E-2	4.0E-3	4.6E-1	4.6E-1	
HAFNIUM	8.2E-2	1.5E-2	5.7E-1	3.3E-1	
TANTALUM	3.6E-2	1.1E-2	3.9E-1	5.6E-1	
TUNGSTEN	4.8E-2	1.3E-1	6.5E-1	1.8E-1	
RHENIUM	1.9E-2	3.7E-3	5.1E-1	4.7E-1	
OSMIUM	1.6E-2	3.3E-3	5.8E-1	4.0E-1	
IRIDIUM	1.7E-2	4.2E-3	5.1E-1	4.7E-1	
PLATINUM	1.3E-2	3.9E-3	4.7E-1	5.2E-1	
GOLD	1.6E-2	3.0E-3	5.6E-1	4.2E-1	
MERCURY	1.9E-2	2.4E-2	1.7E-1	7.9E-1	
THALLIUM	1.3E-1	6.7E-1	8.9E-2	1.1E-1	
LEAD	7.7E-2	8.9E-1	2.0E-2	9.4E-3	
BISMUTH	3.0E-2	3.4E-1	3.6E-1	2.7E-1	
THORIUM	2.0E-1	1.8E-2	4.5E-1	3.3E-1	
URANIUM	3.7E-1	1.8E-1	2.6E-1	1.9E-1	
PHENANTHRENE	2.9E-3	3.9E-3	1.9E-3	1.0E+0	1.8E-2
ANTHRACENE	1.8E-3	1.8E-3	4.6E-4	1.0E+0	2.9E-3
METHYLANTHRACENES/PHENANTHRENES	2.1E-2	2.2E-2	2.1E-2	7.9E-1	1.4E-1
FLUORANTHENE	1.9E-3	1.8E-3	2.1E-3	1.0E+0	4.8E-3
PYRENE	4.8E-2	3.6E-2	2.4E-2	7.0E-1	1.9E-1
METHYLPYRENE/FLUORANTHENE	0.0	7.5E-2	0.0	7.5E-1	1.8E-1
BENZO(C)PHENANTHRENE	1.6E-1	1.6E-1	0.0	3.7E-1	3.1E-1
BENZ(A)ANTHRACENE	1.4E-1	1.4E-1	0.0	4.6E-1	2.7E-1
CHRYSENE	1.2E-1	8.2E-2	4.0E-2	5.2E-1	2.4E-1
METHYLCHRYSENES	0.0	2.0E-1	0.0	6.0E-1	2.0E-1
BENZOFLUORANTHENES	0.0	6.7E-2	0.0	5.0E-1	4.3E-1
BENZO(E)PYRENE	0.0	0.0	0.0	5.9E-1	4.1E-1
BENZO(A)PYRENE	0.0	0.0	0.0	6.7E-1	3.3E-1
PERYLENE	0.0	0.0	0.0	6.7E-1	3.3E-1
INDENO(1,2,3-CD)PYRENE	1.2E-1	0.0	0.0	4.8E-1	4.0E-1
BENZO(G,H,I)PERYLENE	5.3E-2	5.6E-2	5.3E-2	5.5E-1	2.9E-1
3-METHYLCHOLANTHRENE	0.0	0.0	0.0	1.0E+0	0.0
DIBENZPYRENES	0.0	0.0	0.0	0.0	1.0E+0
CORONENE	0.0	0.0	0.0	1.0E+0	0.0

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

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TABLE 2-6

INPUT/OUTPUT RATIOS OF SELECTED INORGANIC TRACE ELEMENTS
(Ratio of Measured Concentration at Boiler Outlet to Input from Coal)

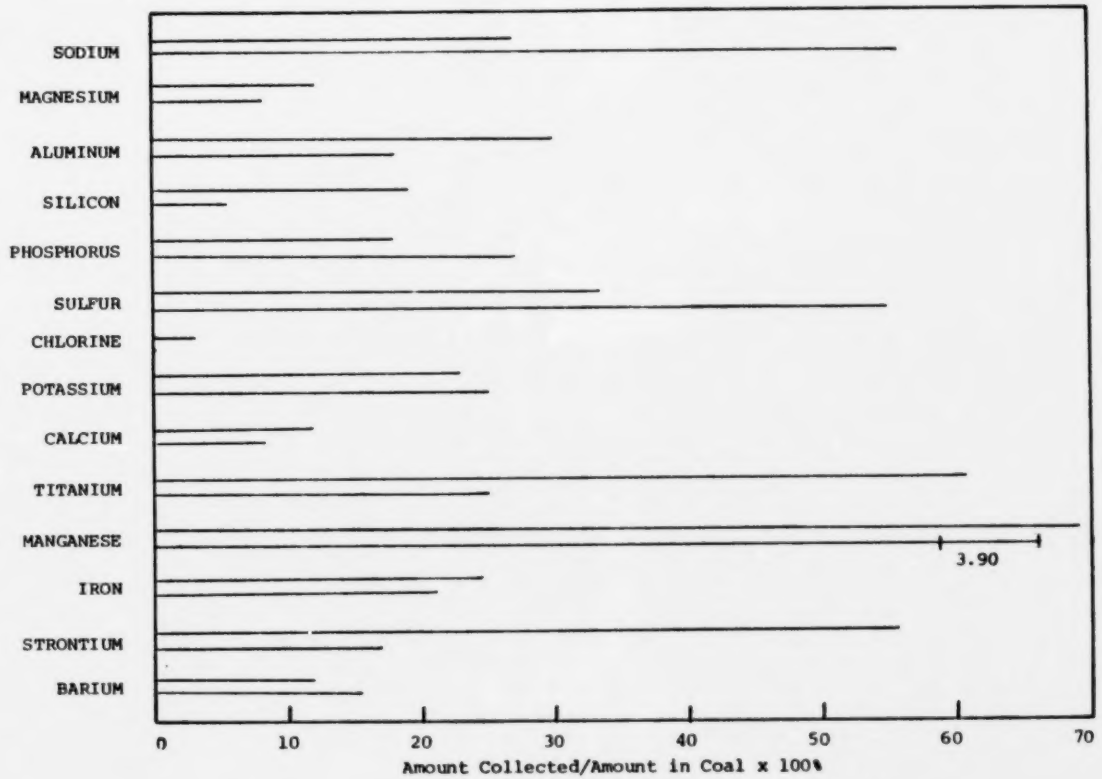
Test	Sodium	Magnesium	Aluminum	Silicon	Phosphorus	Sulfur	Chlorine	Potassium	Calcium	Titanium	Manganese	Iron	Strontium	Barium
D22	0.24	0.04	0.04	0.03	0.34	0.013	0.0014	0.30	0.14	0.29	2.60	0.12	0.04	0.01
E16	0.03	0.01	0.06	0.05	0.04	0.002	0.016	0.05	0.07	0.52	0.37	0.14	0.11	0.13
E17	0.23	0.08	0.05	0.05	0.45	0.004	0.00003	0.10	0.05	0.07	0.22	0.13	----	0.15
F22	0.11	0.03	0.18	0.11	0.09	0.016	0.188	0.08	0.06	0.43	0.50	0.23	0.94	0.13
F30	0.07	0.03	0.14	0.07	0.13	0.005	0.0015	0.18	0.16	0.79	0.50	0.14	0.29	0.10
G15	0.77	0.34	0.52	0.35	0.11	0.953	0.0004	0.17	0.20	0.59	0.82	0.28	0.77	0.12
G20	0.43	0.21	0.82	0.52	0.25	0.998	0.0007	0.81	0.17	1.26	1.70	0.52	0.71	0.10
H11	0.65	0.08	0.04	0.02	0.11	0.022	0.0007	0.20	0.05	0.38	0.22	0.05	----	0.18
I9	0.64	0.08	0.12	0.05	0.30	2.472	0.00003	0.30	0.13	0.10	2.30	0.29	----	0.17
I10	0.53	0.05	0.25	0.07	0.27	0.441	0.0004	0.33	0.14	0.63	14.50	0.54	0.40	0.37
J15	0.50	0.03	0.02	0.02	0.48	0.410	0.0001	0.36	0.03	0.15	2.40	0.25	0.08	0.17
J16	0.46	0.01	0.01	0.01	0.06	0.359	0.0002	0.19	0.03	0.06	1.44	0.16	----	0.09
K10	0.88	0.32	0.79	0.21	0.33	0.126	0.006	0.05	0.04	0.15	-----	0.05	----	----
AVERAGES:														
Spreaders without Reinjection from Dust Collector														
	0.27	0.12	0.30	0.19	0.18	0.330	0.034	0.23	0.12	0.61	0.69	0.24	0.56	0.12
Mass-Fired Overfeed														
	0.56	0.08	0.18	0.06	0.27	0.549	0.001	0.25	0.08	0.25	3.90	0.21	0.17	0.16

Fourteen elements were measured in the coal's ash using an x-ray flourescent technique. This technique is a proposed ASTM test method and is expected to be adopted as an official test method this year. The fourteen elements make up over 99% of the ash in the coal.

Input/output ratios for these fourteen elements are shown in Table 2-6. Spreader stokers with reinjection from the dust collector (Sites A, B, and C) are excluded from this table because their data would be misleading. At these three sites, reentrainment and recirculation of the reinjected flyash artifically boasted the dust loading and created emission factors greater than one. In other words, the sampling location was located inside a closed loop.

For stokers without reinjection from the dust collector, 1% to about 70% of the inorganic trace elements input to the stokers are collected in the SASS train. Input/output ratios for the mass-fired overfeed stokers range from about 1% to 55%. They are generally a little lower than the input/output ratios for the spreader stokers without reinjection from the dust collector due to their lower particulate loading caused by the lack of suspension burning. Input/output ratios from tests run at Site J are a little less than they should be, since SASS tests were run after the dust collector. At this site, the larger particles, such as those found in the 18.5 and 5.9-micrometer cyclones, were collected by the mechanical dust collector and therefore were not collected by the SASS train.

From the bar graph of the input/output ratio averages in Figure 2-3, it appears that 10 to 30% of the elemental input is being emitted from the boiler at the boiler outlet. The elements present in the ash in quantities of less than 1% had the most eratic or unreasonable input/output ratios. Manganese, for example, had input/output ratios ranging from 0.22 to 14.5. With a factor of 3 error in calculating the emissions and such small elemental input, the input/output ratios are more likely to magnify any errors.



Upper Bar = Spreader Stokers without Reinjection from Dust Collector
Lower Bar = Mass Fired Overfeed Stoker

FIGURE 2-3 INPUT/OUTPUT RATIO AVERAGES

2.3.5 Emission Correlations with Operating Conditions

Attempts at making some correlations between SASS emissions and some stoker operating parameters were made and are listed in Tables 2-7 and 2-8. Inorganic trace elements were correlated with flue gas oxygen, total ash input, grate heat release, hydrocarbon emissions, boiler efficiency, carbon monxoide emissions, and the elemental input in the coal, while the PAHs were correlated with flue gas oxygen, coal fines, coal volatiles, grate heat release, hydrocarbons, boiler efficiency, and carbon monoxide. The correlations are based on the deviation in the sample points from the slope that best fits them. As the value of the correlation approaches one (or negative one), the better the correlation. A positive number indicates that the emissions increase with the parameter and a negative number indicates a decrease. These correlations involve only the tests without flyash reinjection from the dust collector (Sites D through K), since the emissions from sites with reinjection from the dust collector are misleading.

For the most part, these correlations were unsuccessful. Correlations for the most common inorganic trace elements (sodium, magnesium, aluminum, etc.) with elemental input in the fuel were good (0.5 or better). These correlations would be expected to be good, because these inorganic trace element emissions are directly related to the mineral composition of the fuel ash. The rest of the correlations may be debatable. The problem with getting good correlations is that the testing procedure gives emissions within a factor of 3, resulting in a wide spread in the data.

2.3.6 Stack Gas Cleanup - Emission Predictions

Emission predictions for stack gas cleanup were made and can be found on the computer printouts in the appendices for each inorganic trace element and PAH studied. Since all SASS tests, except at Site J, were run before any pollution control devices, stack gas emissions cleanup were predicted for the addition of a multiclone dust collector, an electrostatic precipitator, and a baghouse.

Based on the performance curves of a UOP 6 MP Multiclone Dust Collector, emissions were predicted to be reduced, at Sites A, B, and C, by 91.2% of the particulate matter caught in the 10-micrometer and 3-micrometer cyclones and

TABLE 2-7

INORGANIC TRACE ELEMENT CORRELATIONS

Element	Percent Flue Gas Oxygen	Total Ash	Grate Heat Release	Hydrocarbons	Boiler Efficiency	Carbon Monoxide	Element Input
Lithium	0.02	0.29	0.25	-0.24	-0.62	-0.30	-----
Beryllium	0.01	-0.07	0.05	0.82	-0.51	0.46	-----
Boron	-0.24	-0.11	-0.47	-0.20	-0.27	-0.38	-----
Fluorine	-0.03	-0.37	-0.39	-0.18	-0.18	-0.29	-----
Sodium	0.11	-0.05	-0.12	-0.14	-0.50	-0.42	0.62
Magnesium	0.28	0.15	0.22	-0.15	-0.45	-0.29	0.70
Aluminum	0.22	0.18	0.41	-0.20	-0.49	-0.12	0.36
Silicon	0.17	0.36	0.49	-0.19	-0.47	-0.14	0.48
Phosphorus	-0.55	0.07	-0.06	0.03	0.29	0.31	0.31
Sulfur	-0.37	0.15	-0.20	-0.17	-0.43	-0.28	0.41
Chlorine	0.14	0.06	0.04	-0.13	0.16	-0.11	-0.21
Potassium	0.08	0.15	0.13	-0.15	-0.40	-0.21	0.08
Calcium	-0.22	0.36	0.19	-0.31	-0.61	-0.01	0.04
Scandium	-0.54	0.41	0.70	-0.16	-0.07	0.60	-----
Titanium	0.06	0.36	0.60	-0.14	-0.36	0.12	0.19
Vanadium	-0.25	0.51	0.62	0.13	-0.28	0.48	-----
Chromium	-0.39	0.17	-0.24	-0.21	-0.34	-0.25	-----
Manganese	-0.22	-0.17	-0.37	-0.13	-0.46	-0.30	0.25
Iron	-0.53	0.09	-0.09	-0.19	-0.43	-0.03	0.63
Cobalt	-0.56	0.22	-0.11	-0.18	-0.33	-0.09	-----
Nickel	0.05	-0.30	-0.30	-0.14	0.12	-0.19	-----
Copper	0.22	-0.42	-0.61	-0.20	0.12	-0.39	-----
Zinc	0.00	-0.32	-0.57	-0.12	-0.37	-0.32	-----
Gallium	0.22	0.10	-0.42	-0.04	-0.43	-0.30	-----
Germanium	-0.39	0.03	-0.31	-0.14	-0.42	-0.26	-----
Arsenic	-0.24	-0.20	-0.38	0.20	-0.59	-0.16	-----
Selenium	-0.22	-0.22	-0.04	-0.14	-0.30	0.00	-----
Bromine	-0.35	-0.04	-0.29	-0.26	-0.42	-0.37	-----
Rubidium	0.14	0.35	-0.11	-0.21	-0.51	-0.51	-----
Strontium	-0.19	0.43	0.58	-0.15	-0.62	0.16	0.42
Yttrium	0.21	0.07	-0.23	-0.12	-0.02	0.04	-----
Zirconium	-0.17	0.68	0.65	-0.09	-0.50	-0.01	-----
Niobium	-0.41	0.41	0.24	-0.26	-0.60	-0.12	-----
Molybdenum	0.10	-0.57	-0.54	-0.06	-0.47	-0.37	-----
Ruthenium	-0.15	-0.27	-0.40	-0.19	-0.25	-0.29	-----
Rhodium	-0.09	-0.33	-0.42	-0.21	-0.25	-0.30	-----
Paladium	-0.15	-0.28	-0.43	-0.20	-0.22	-0.28	-----
Silver	0.16	-0.06	0.07	-0.14	-0.37	-0.24	-----
Cadmium	-0.26	-0.07	-0.35	-0.21	-0.36	-0.29	-----
Indium	-0.43	0.00	-0.28	-0.15	-0.44	-0.21	-----
Tin	0.33	-0.20	-0.64	-0.10	-0.27	-0.36	-----
Antimony	0.02	-0.02	-0.56	-0.02	-0.08	-0.31	-----
Tellurium	-0.28	-0.08	-0.34	-0.21	-0.36	-0.31	-----
Iodine	0.01	-0.24	0.08	-0.32	0.26	0.14	-----
Cesium	-0.09	0.37	0.12	-0.10	-0.61	-0.52	-----
Barium	-0.21	-0.15	0.09	-0.15	-0.27	-0.15	0.65
Lanthanum	-0.13	0.55	0.61	-0.11	-0.57	-0.04	-----
Cerium	-0.24	0.10	0.24	-0.09	-0.62	-0.11	-----
Praesodymium	-0.15	0.30	0.51	-0.19	-0.50	0.05	-----
Neodymium	-0.21	0.03	0.07	0.14	-0.56	-0.13	-----
Samarium	-0.30	0.02	-0.06	-0.30	-0.56	-0.24	-----
Europium	-0.08	-0.42	-0.40	-0.14	-0.44	-0.31	-----
Gadolinium	-0.34	-0.02	-0.11	-0.21	-0.57	-0.26	-----
Terbium	-0.06	-0.42	-0.33	-0.27	-0.21	-0.29	-----
Dysprosium	-0.69	0.37	0.42	-0.21	-0.28	0.37	-----
Holmium	-0.03	-0.32	-0.17	-0.12	-0.29	-0.09	-----
Erbium	-0.36	-0.09	-0.19	-0.12	-0.40	-0.07	-----
Thulium	-0.07	-0.42	-0.54	-0.24	-0.06	-0.41	-----
Ytterbium	-0.24	-0.23	-0.29	-0.17	-0.39	-0.22	-----
Lutetium	0.13	-0.53	-0.46	-0.17	-0.13	-0.31	-----
Halfnium	-0.09	-0.20	-0.35	-0.29	-0.34	-0.38	-----
Tantalum	0.19	-0.50	-0.48	-0.26	0.08	-0.32	-----
Tungsten	0.01	-0.46	-0.61	-0.10	-0.34	-0.31	-----
Rhenium	0.01	-0.44	-0.46	-0.19	-0.15	-0.29	-----
Osmium	-0.15	-0.31	-0.45	-0.20	-0.18	-0.28	-----
Iridium	0.02	-0.45	-0.46	-0.19	-0.15	-0.29	-----
Platinum	-0.12	-0.39	-0.51	-0.23	-0.18	-0.36	-----
Gold	-0.09	-0.35	-0.43	-0.20	-0.20	-0.28	-----
Mercury	-0.09	0.18	0.55	-0.02	-0.26	0.24	-----
Thallium	0.16	-0.44	-0.80	-0.08	-0.23	-0.42	-----
Lead	0.13	-0.24	-0.42	-0.15	0.39	-0.24	-----
Bismuth	0.28	-0.45	-0.75	-0.27	-0.06	-0.38	-----
Thorium	-0.40	0.03	0.02	-0.24	-0.35	0.02	-----
Uranium	-0.34	0.16	0.29	-0.29	-0.47	0.10	-----

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TABLE 2-8

PAH CORRELATIONS

PAH	Percent Flue Gas Oxygen	Coal Fines	Coal Volatiles	Grate Heat Release	Hydrocarbons	Boiler Efficiency	Carbon Monoxide
Phenanthrene	0.32	-0.29	-0.12	-0.35	-0.13	0.32	0.07
Anthracene	0.43	-0.38	0.07	-0.50	-0.10	0.24	-0.09
Methylanthracene/Phenanthrenes	-0.16	0.15	-0.58	0.32	0.19	0.24	0.54
Fluoranthene	0.41	-0.36	0.03	-0.47	-0.10	0.26	-0.05
Pyrene	0.10	-0.42	-0.27	-0.32	-0.17	0.84	0.18
Methylpyrene/Fluoranthene	-0.24	0.17	-0.59	0.34	-0.12	0.40	0.46
Benzo(c)phenanthrene	0.71	-0.67	0.53	-0.88	-0.08	0.11	-0.54
Benz(a)anthracene	0.29	-0.55	0.07	-0.60	-0.23	0.48	-0.19
Chrysene	-0.04	-0.04	-0.27	-0.01	0.54	0.17	0.60
Methylchrysenes	0.02	-0.27	-0.41	-0.11	0.36	0.00	0.67
Benzofluoranthenes	0.17	-0.38	-0.26	-0.35	0.16	0.37	0.39
Benzo(e)pyrene	-0.13	-0.02	-0.40	0.39	0.74	-0.68	0.98
Perylene	0.43	-0.67	0.30	-0.29	0.96	-0.93	0.54
Indeno(1,2,3-cd)pyrene	-0.46	0.18	-0.51	0.28	0.10	0.14	0.56
Benzo(g,h,i)perylene	-0.02	-0.10	-0.45	0.02	0.03	0.13	0.47
Coronene	-0.36	0.26	-0.93	0.70	0.02	0.04	0.86

by 25.0% of the particles caught in the 1-micrometer cyclone and on the filter. For Sites D, F, G, H, I, and K, (not Site J since it was tested ahead of the dust collector), emissions were predicted to be reduced by 96.8% of the particles caught in the 18.5-micrometer and 5.9-micrometer cyclones and 45.0% of the particles caught in the 1.4-micrometer cyclone and on the filter.

The addition of an electrostatic precipitator was predicted to reduce all particulate matter caught on the SASS filter and cyclones by 99.3%. Emissions were predicted to be reduced by the addition of a baghouse by 99.85% of the particulate matter caught on the SASS filter and cyclones at Sites A, B, and C, 99.6% for Sites E, F, and G, and 98.5% at Sites D, H, I, J, and K. All particulate matter passing through the SASS filter (less than 0.3 micrometers) is assumed not to be collected by any of these pollution control devices. For information on where these assumptions come from and how they were determined, see Section 6.0, Data Reduction Techniques.

As could be expected, the emissions for all types of stokers were about the same after the addition of the pollution control devices, since particulates caught in the first two cyclones contribute the largest fraction to the total sample catch for all stokers tested, and are the easiest to be collected.

3.0 DESCRIPTION OF UNITS TESTED, COALS FIRED, AND TEST CONDITIONS

3.1 UNITS TESTED

Eleven units were tested during this program with the Source Assessment Sampling System (SASS) train. Six of these units were spreader stokers and five were mass-fired overfeed stokers.

By definition, a spreader stoker is an overfeed stoker that discharges the fuel into the furnace from a location above the fuel bed and distributes the fuel onto the grate. Spreader stokers are characterized by a thin fuel bed and partial suspension burning.

Mass-fired overfeed stokers differ from spreader stokers in the manner by which fuel is fed onto the grate. In this type of stoker, a layer of coal, 4 to 11 inches thick, is continuously layed down on one end of the grate. The motion of the grate conveys this coal continuously through the furnace where it is consumed. Ash is continuously discharged at the opposite end of the grate. Mass-fired overfeed stokers include traveling grate, chain grate and vibrating grate units.

The eleven stokers tested for this program represent a wide range of state-of-the-art designs, since stoker designs have changed very little over the past twenty years. Table 3-1 gives a brief description of each unit tested. A complete description of each unit can be found in the corresponding site reports. (1-22)

3.2 COALS FIRED

Coal samples were taken during each SASS test to be processed for chemical composition. The samples were taken as close to the furnace as possible in order to obtain samples that were representative of the coal fired during testing. Samples were taken from the coal scales or weigh lorries at sites with coal weighing devices, while at sites without them, samples were taken from ports installed directly above the feeders. Except for the coals tested at Site A and Site C, all coals were Eastern bituminous coals ranging from 12,000 to 14,000 Btu/hr. The coals tested at Site A were Wyoming coals with higher heating values of 10,000 Btu/lb, while the Western coals fired at Site C, Tests C44 and C45, had heating values of about 8,500 Btu/lb. Complete chemical analysis of the coal can be found in Table 3-2, mineral analysis of the coal ash can be found in Table 3-3, and coal classification can be found in Table 3-4.

TABLE 3-1

DESCRIPTION OF UNITS TESTED

Site	Year Built	Steaming Capacity	Stoker Type	Grate Type	Boiler Passes	Backend Equipment By Order Of Occurrence
A	1976	300,000	Spreader	Traveling	Single	Air Heater, Dust Collector with Reinjection, ESP, Economizer, Scrubber
B	1974	200,000	Spreader	Traveling	Single	Dust Collector with Reinjection, Economizer, ESP
C	1975	182,500	Spreader	Traveling	Single	Dust Collector with Reinjection, Economizer, Air Heater, ESP
D	1964	90,000	Mass Fired Overfeed	Vibrating	Multiple	Economizer, Dust Collector
E	1973	180,000	Spreader	Traveling	Single	Economizer, Dust Collector
F	1976	80,000	Spreader	Traveling	Multiple	Economizer, Dust Collector
G	1974	75,000	Spreader	Traveling	Multiple	Dust Collector
H	1959	45,000	Mass Fired Overfeed	Traveling	Multiple	NONE
I	1960	70,000	Mass Fired Overfeed	Traveling	Multiple	NONE
J	1977	70,000	Mass Fired Overfeed	Chain	Multiple	Economizer, Dust Collector
X	1977	50,000	Mass Fired Overfeed	Traveling	Multiple	Economizer, Dust Collector

TABLE 3-2

SASS - FUEL ANALYSIS

TEST	PROXIMATE ANALYSIS (% AS RECEIVED)					ULTIMATE ANALYSIS (% AS RECEIVED)							
	Moisture	Ash	Volatiles	Fixed Carbon	Btu/Lb	Moisture	Carbon	Hydrogen	Nitrogen	Chlorine	Sulfur	Ash	Oxygen
A27	17.17	3.54	35.04	44.25	10393	17.17	60.44	4.12	1.01	0.01	0.85	3.54	12.86
A34	12.72	8.79	33.82	44.67	10534	-----	-----	----	----	----	0.73	----	-----
A35	13.06	7.81	34.37	44.76	10683	13.06	62.19	4.11	0.82	0.01	0.35	7.81	11.65
A40	17.83	4.58	34.05	43.54	10206	17.83	58.99	4.08	0.84	0.00	0.63	4.58	13.05
B30	4.71	8.35	32.73	54.21	13222	4.71	73.61	4.79	1.38	0.11	0.87	8.35	6.18
B31	4.36	8.18	34.43	53.03	13150	4.36	73.29	4.81	1.10	0.07	0.93	8.18	7.26
B33	2.75	6.77	35.17	55.31	13649	2.75	76.37	5.06	1.11	0.15	0.79	6.77	7.00
C44	24.12	8.63	29.59	37.66	8823	24.12	51.96	3.37	1.00	0.02	0.56	8.63	10.34
C45	26.57	8.59	28.59	36.25	8457	26.57	49.90	3.17	1.04	0.01	0.54	8.59	10.18
C46	4.54	9.66	35.49	50.31	12831	4.54	71.46	4.79	1.04	0.07	2.57	9.66	5.87
D22	3.05	6.47	37.43	53.05	13453	3.05	75.08	4.98	1.27	0.06	1.10	6.47	7.99
E16	7.57	8.01	34.02	50.40	12486	7.57	70.02	4.60	0.86	0.07	0.74	8.01	8.13
E17	7.11	8.07	33.81	51.01	12530	7.11	70.66	4.65	1.19	0.08	0.82	8.07	7.42
F22	3.13	9.44	23.58	63.85	13627	3.13	76.57	4.69	1.26	0.15	1.51	9.44	3.25
F30	3.84	9.12	25.39	61.65	13568	3.84	76.09	4.68	1.09	0.17	0.99	9.12	4.02
G15	4.22	9.50	34.95	51.33	12649	4.22	71.62	4.66	1.12	0.07	0.68	9.50	8.13
G20	4.81	6.95	36.47	51.77	12860	4.81	72.43	4.90	1.04	0.05	0.69	6.95	9.13
H11	11.20	5.52	37.51	47.55	11963	11.20	67.17	4.56	1.11	0.05	1.62	5.52	8.77
I9	2.96	8.37	38.15	50.52	13308	2.96	72.62	4.97	1.26	0.40	1.88	8.37	7.54
I18	1.97	5.45	39.53	53.05	13995	1.97	77.88	5.22	1.49	0.13	1.33	5.45	6.53
J15	2.09	5.02	39.58	53.31	12954	1.96	76.77	5.09	1.23	0.13	1.43	7.25	6.14
J16	3.73	7.77	38.06	50.44	12990	3.05	74.74	5.13	1.66	0.19	1.75	7.05	6.43
K18	6.80	3.91	37.42	51.87	13168	6.80	73.85	5.00	1.55	0.07	1.39	3.91	7.43

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TABLE 3-3

SASS - MINERAL ANALYSIS OF ASH

TEST	SILICA SiO_2	ALUMINA Al_2O_3	TITANIA TiO_2	FERRIC OXIDE Fe_2O_3	LIME CaO	MAGNESIA MgO	POTASSIUM OXIDE K_2O	SODIUM OXIDE Na_2O	SULFUR TRIOXIDE SO_3	PHOSPHORUS PENTOXIDE P_2O_5	STRONTIUM OXIDE SrO	BARIUM OXIDE BaO	MANGANESE OXIDE Mn_3O_4
A27	41.66	18.29	0.66	4.49	12.25	4.20	0.50	0.32	17.15	0.15	----	----	----
A34	Not sent in for mineral analysis. Test A35 analysis used since it was from the same mine.												
A35	46.02	18.65	0.70	6.96	14.80	1.62	0.65	1.02	8.23	0.78	----	----	----
A40	51.88	18.49	0.75	5.02	8.12	2.76	0.90	0.32	10.77	0.18	----	----	----
B30	55.65	29.30	1.76	6.34	1.40	0.87	2.15	0.77	0.86	0.38	----	----	----
B31	52.64	31.40	1.54	6.44	1.90	1.05	2.30	0.63	1.05	0.44	----	----	----
B33	54.14	29.99	1.65	6.60	2.00	0.68	1.23	0.47	1.15	0.62	----	----	----
C44	43.62	16.42	0.88	4.49	16.00	3.60	0.55	0.45	12.69	0.21	----	----	----
C45	43.61	18.57	0.99	5.13	12.80	4.04	0.60	0.60	12.25	0.18	----	----	----
C46	43.76	21.64	1.03	24.83	2.45	0.90	1.65	0.60	2.81	0.21	----	----	----
D22	49.83	29.97	1.55	10.15	1.88	0.86	1.61	0.54	1.38	0.36	0.15	0.23	0.01
E16	49.80	36.27	1.63	5.19	2.07	0.88	2.07	0.25	1.15	0.43	0.08	0.11	0.01
E17	52.67	31.68	3.71	6.22	1.64	0.77	1.88	0.26	0.81	0.18	0.00	0.14	0.01
F22	41.47	32.72	1.23	16.23	2.52	0.64	1.59	0.35	2.00	0.82	0.04	0.09	0.02
F30	47.95	32.66	1.46	10.68	1.45	0.74	2.15	0.44	1.38	0.45	0.10	0.17	0.01
G15	52.83	31.52	1.58	6.84	1.19	1.09	2.47	0.48	0.80	0.14	0.08	0.23	0.02
G20	49.62	37.75	1.88	4.52	1.32	0.84	1.53	0.31	0.56	0.15	0.07	0.12	0.01
H11	39.73	23.32	1.12	28.23	1.91	0.62	1.74	0.23	0.36	0.66	0.00	0.07	0.02
I9	38.94	23.04	1.22	27.22	2.39	0.81	1.93	0.33	1.55	0.34	0.00	0.04	0.05
I18	42.57	25.24	1.59	18.87	2.99	0.75	1.48	0.96	3.08	0.26	0.18	0.36	0.02
J15	44.08	26.46	1.51	17.80	2.28	0.78	1.78	0.80	1.85	0.31	0.14	0.30	0.02
J16	42.48	26.60	1.29	22.09	2.11	0.83	1.91	0.35	1.43	0.40	0.00	0.08	0.05
K18	38.35	26.25	1.14	21.19	5.59	1.57	1.75	0.25	1.99	0.10	----	----	----

TABLE 3-4

SASS - COAL IDENTIFICATION AND CLASSIFICATION*

Test	Identifier	ASTM Classification by Rank	MINERAL MATTER FREE (mmF) COMPOSITION BY PARR FORMULAS		
			Dry, mmF F.C.	Dry, mmF V.M.	Moist, mmF Btu
A27	Kemmerer	High volatile C bituminous coal	56	44	10810
A34	Consolidation	High volatile C bituminous coal	58	42	11650
A35	Consolidation	High volatile C bituminous coal	57	43	11670
A40	Kemmerer	High volatile C bituminous coal	57	43	11740
B30	Hatfield	High volatile A bituminous coal	63	37	14560
B31	Kentucky Cumberland	High volatile A bituminous coal	61	39	14450
B33	Southeast	High volatile A bituminous coal	62	38	14750
C44	Western	Subbituminous B coal	57	43	9730
C45	Western	Subbituminous C coal	57	43	9320
C46	Eastern Low Fusion	High volatile A bituminous coal	60	40	14410
D22	Victoria	High volatile A bituminous coal	59	41	14500
E16	Eastern Kentucky	High volatile B bituminous coal	60	40	13690
E17	Kentucky	High volatile B bituminous coal	61	39	13750
F22	Pennsylvania A	Medium volatile bituminous coal	74	26	15230
F30	Pennsylvania B	Medium volatile bituminous coal	72	28	15090
G15	White Ash	High volatile A bituminous coal	60	40	14120
G20	Pevler	High volatile B bituminous coal	59	41	13920
H11	Sands Hill	High volatile C bituminous coal	58	42	12760
I9	C&W (Ohio)	High volatile A bituminous coal	58	42	14690
I18	Spurlock (Kentucky)	High volatile A bituminous coal	58	42	14920
J15	Spurlock (Kentucky)	High volatile B bituminous coal	58	42	13740
J16	C&W (Ohio)	High volatile A bituminous coal	58	42	14230
K18	Briliant (Alabama Washed)	High volatile B bituminous coal	59	41	13790

*Classification of coals is by rank (ASTM D388) using the Parr Formulas

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3.3 TEST CONDITIONS

Due to the 8-hour length of most SASS tests, KVB did not want to interfere with the host site's normal plant operations, and the SASS tests were generally run at as-found conditions. All SASS tests were run at the boiler outlet (dust collector inlet), except at Site J where the flue gas flow was too erratic to satisfy test conditions. Site J SASS tests were conducted at the multiclone dust collector outlet. Table 3-5 lists the test conditions.

TABLE 3-5

SASS TEST CONDITIONS

TEST	DATE	% CAPACITY	COAL	% O_2 DRY	% CO_2 DRY	CO PPM DRY	NOx LB/10^6BTU	SOx LB/10^6BTU
A27	10-08-77	81	Kemmerer	4.2	----	1022	0.533	-----
A34	10-29-77	76	Consolidation	5.9	----	300	0.492	1.023
A35	10-30-77	76	Consolidation	6.0	----	313	0.541	0.841
A40	11-11-77	66	Kemmerer	6.9	----	108	0.754	-----
B30	3-17-78	78	Hatfield	6.0	13.0	46	0.313	0.922
B31	3-18-78	77	KY Cumberland	6.0	13.0	27	0.350	0.828
B33	3-21-78	79	Southeast	6.1	12.9	47	0.327	0.776
C44	6-15-78	97	Western	8.9	10.9	263	0.533	1.936
C45	6-17-78	97	Western	8.3	11.1	272	0.516	1.606
C46	6-20-78	99	East Low Fusion	9.0	10.2	57	0.595	3.709
D22	9-21-78	59	Victoria	10.2	10.0	29	0.327	2.444
E16	1-08-79	62	Eastern KY	8.3	11.0	----	0.486	1.951
E17	1-10-79	62	Kentucky	6.2	13.4	----	0.524	1.435
F22	1-31-79	99	Penn A	6.0	13.2	352	0.385	2.188
F30	2-13-79	97	Penn B	6.8	11.7	284	0.391	1.342
G15	3-16-79	87	White Ash	8.7	10.6	----	0.621	1.056
G20	3-21-79	78	Pevler	9.2	10.4	----	0.536	1.049
H11	4-04-79	100	Sands Hill	9.4	9.2	197	0.478	3.463
I9	5-10-79	102	Ohio	5.9	12.9	----	0.295	3.656
I18	5-23-79	101	Kentucky	7.8	11.0	----	0.255	1.865
J15	6-28-79	94	Kentucky	7.9	9.9	----	0.322	1.968
J16	6-30-79	93	Ohio	8.9	8.9	----	0.438	2.877
K18	11-12-79	78	Alabama Washed	9.8	8.6	----	0.284	1.159

4.0 TEST EQUIPMENT AND PROCEDURES

4.1 EQUIPMENT

The EPA (IERL-RTP) has developed the Source Assessment Sampling System (SASS) train for the collection of particulate and volatile matter in addition to gaseous samples (Figure 4-1). The "catch" from the SASS train is analyzed for polynuclear aromatic hydrocarbons (PAH) and inorganic trace elements.

In this system, a stainless steel heated probe is connected to an oven module containing three cyclones and a filter. Size fractionation is accomplished in the series cyclone portion to provide large quantities of particulate matter which are classified by size into three ranges:

	Sites A, B, & C	Sites D through K
1)	>10 μm	>18.5 μm
2)	3 μm to 10 μm	5.9 μm to 18.5 μm
3)	1 μm to 3 μm	1.4 μm to 5.9 μm

Together with a filter, a fourth cut (<1 μm) is obtained. Volatile organic material is collected in an XAD-2 sorbent trap. The XAD-2 trap is an integral part of the gas treatment system which follows the oven containing the cyclone system. The gas treatment system is composed of four primary components: the gas conditioner, the XAD-2 organic sorbent trap, the aqueous condensate collector, and a temperature controller. The XAD-2 sorbent is a porous polymer resin with the capability of absorbing a broad range of organic species. Some trapping of volatile inorganic species is also anticipated as a result of simple impaction. Volatile inorganic elements are collected in a series of impingers. The pumping capacity is supplied by two 10-cfm high-volume vacuum pumps, while required pressure, temperature, power, and flow conditions are obtained from a main controller.

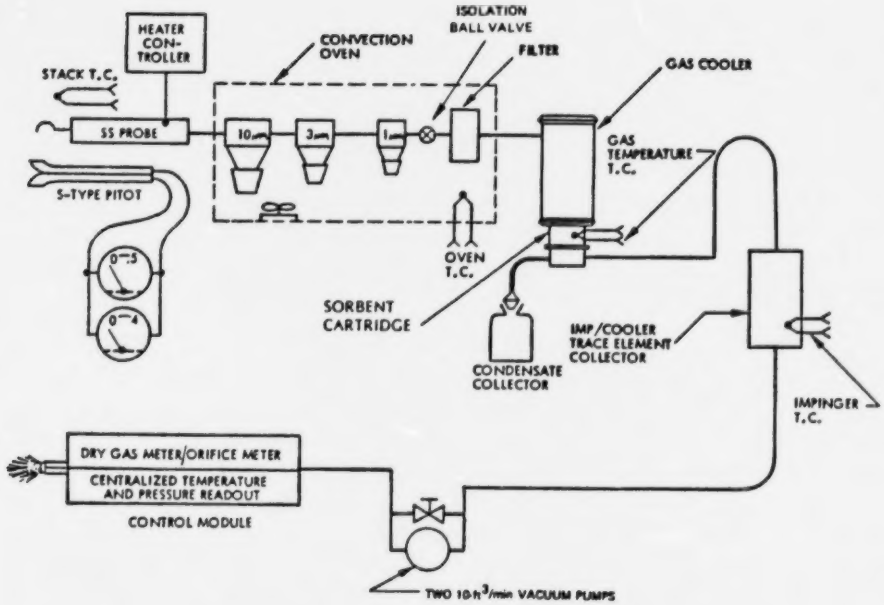

FIGURE 4-1

SOURCE ASSESSMENT SAMPLING SYSTEM (SASS) FLOW DIAGRAM

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4.2 SAMPLING PROCEDURE

The SASS train is basically a high-volume EPA Method 5 system modified to collect organic compounds and trace metals that would normally pass through the standard Method 5 train. SASS sampling procedures and analytical techniques were conducted in accordance with EPA Level 1 guidelines. (23) The major design differences are the XAD-2 absorbent module, the multiple cyclone assembly and the new impinger solutions (30% H_2O_2 in the first impinger and 0.2M $(NH_4)_2 S_2O_8$ + 0.2M $AgNO_3$ in the second and third impingers instead of distilled water).

To preserve the cyclone "cut-off" points, the sampling flow rate is adjusted to maintain 4.0 actual wet cubic feet per minute (awcfm) at 400°F cyclone oven temperature conditions. A different SASS train was used after Site C, and that train required a flow rate of 4.0 wet standard cubic feet per minute (wscfm) at the cyclones. This was not discovered until after testing at all sites had been completed using the 4.0 awcfm flow rate for the cyclone "cut-off" points. Using this slower flow rate resulted in raising the "cut-off" points slightly for the remaining Sites D through K. The SASS sample is acquired from only a single point, so this point must be of average velocity near the center of the duct. Since isokinetic sampling is also required, all of these conditions must be satisfied to as high a degree as possible when selecting the optimum probe nozzle diameter.

Before sampling begins, the SASS train is leak checked with an allowable leak rate of no more than 0.015 cfm at 20 in. of mercury pump suction. Once the train is ready, sampling begins at the predetermined flow rate. All temperatures and flow rates are then monitored and recorded every 10 minutes and adjusted as boiler conditions change and as the filter begins to plug. The rate of filter plugging is evident by the gradual increase in sample pump vacuum required to maintain the sample flow. When the desired sample flow rate cannot be maintained, it becomes necessary to shut the train down and stop testing to install a new filter. Usually six or seven preweighed filters are prepared in advance due to the high particulate loading found in stoker fired boilers. During testing, the condensate from the XAD-2 module is transferred from the condensate cup to the condensate collection flask so as to not overfill the condensate cup which would result in condensate carryover into the impingers.

This transferring procedure can be accomplished without shutting down the train and interrupting the test by opening and closing the ball valves at the inlet and outlet to the XAD-2 module.

Testing is completed after 600 ft^3 ($17m^3$) of flue gas have been sampled. At the conclusion of testing, the SASS train is once again leak checked to insure that no leaks occurred during testing.

4.3 ANALYTICAL TECHNIQUES

The laboratory or clean room for preparing and disassembling the SASS train is made as clean as possible under the existing field conditions. Every attempt is made to avoid drafts, the floor is swept to minimize dust and dirt, plastic tablecloths are used and the workbench is wiped down with methanol. Inlet filters or an air conditioner should be in place and rubber gloves or forceps are used when washing and handling the equipment and sample containers.

The entire SASS train (all cyclones, hoses, impingers, probes, etc.) is cleaned thoroughly prior to testing, washing in three successive stages using a different solvent during each stage. The solvents used are distilled water, nanograde isopropyl alcohol and a 50-50 mixture of nanograde methanol and dichlorolmethane. These washes remove all extraneous particulate matter and provide a clean dry surface.

At the conclusion of the test, the SASS train is disassembled and brought back to the laboratory for breakdown and cleaning. The filters are put in a desiccator and dried overnight, then they are weighed and placed into petri dishes. The cyclone catches are emptied into pre-weighed, high-density polyethylene bottles to determine particulate loading.

The probe, cyclones, filter housings, and XAD-2 module are each washed separately with the 50-50 methanol and dichlorolmethane solution and rinsed into prewashed glass amber bottles. The impingers are each rinsed with a known volume of distilled water and isopropyl alcohol into Nalgene containers, combining the second and third impinger solutions. All washes and particulate catches are then wrapped and packed carefully and shipped to the laboratory for analysis.

5.0 ANALYTICAL PROCEDURES

5.1 ORGANIC ANALYSES

The PAH analytical procedure used at Battelle consists of sample extraction and concentration, and liquid chromatographic cleanup, with analysis and quantification by gas chromatography with quadrupole mass spectrometry (GC/MS).

Extractions are carried out using only distilled-in-glass solvents to avoid contamination of the sample with the significant amounts of impurities found in other grade solvents. Filters and samples obtained by adsorption onto XAD-2 are extracted with methylene chloride in a Soxhlet apparatus for 24 hours. Water samples are extracted with methylene chloride (10% of water volume), separated and the methylene chloride fraction dried over magnesium sulfate.

At this point, all samples are spiked with a standard solution of 9-methylanthracene, 9-phenylanthracene and 9,10-diphenylanthracene at a level of 5 µg per sample. The samples are reduced to a volume of about 10 ml by use of a rotating evaporator. Samples in methylene chloride must be solvent exchanged into cyclohexane to insure proper LC separation. Thus, 15 ml of cyclohexane is added to the sample and the volume reduced to 1 ml by Kuderna-Danish evaporation.

The sample is liquid chromatographed on silica gel to remove interfering species. The column is packed with a slurry of methylene chloride and 10 g of Davison grade 923, 100-200 mesh silica gel and washed with a 40 ml fraction of petroleum ether. The sample is then introduced onto the top of the column and eluted by a 25 ml fraction of petroleum ether and 20 ml fraction of 20% methylene chloride in petroleum ether which are collected and discarded. PAHs are eluted with 75 ml of 20% methylene chloride in petroleum ether, followed by 30 ml of 50% methylene chloride in petroleum ether. This mixed fraction is reduced to a convenient volume (usually about 1 ml) in a Kuderna-Danish concentrator. Further concentration to about 0.5 ml is achieved by directing a gentle stream of nitrogen across the top of the sample.

The PAH compounds are quantitatively analyzed by 70eV electron impact GC/MS using a 30 m SE-52 capillary column. The column is temperature programmed from 160-320°C at 4°C/min, holding at the upper temperature until completion of the analysis. The injector, transfer line, and separator oven temperature are all 300°C.

The CG/MS system used for quantitative analysis consists of a Finnigan Model 9500, biomedical-type gas chromatograph coupled with a Finnigan Model 3200, mass spectrometer. Data collection and processing is handled by a Finnigan Incos Data System which utilizes a Data General Nova 3 computer with 32K memory.

The molecular ions of up to three compounds of interest are simultaneously monitored. Quantification is achieved by ratioing the ion current of the molecular ion of interest to that to the internal standard and applying a calibration factor to minimize the differences in ionization efficiencies of the compound of interest and the internal standard. The use of single ion monitoring minimized interferences from fragmentation of extraneous compounds which were not removed during the liquid chromatographic cleanup.

A four point standard curve is determined for each of five PAHs using three internal standards. These standards are analyzed in triplicate along with a blank sample which tests the baseline. The approximate concentrations of the standards are given in Table 5-1. For each standard, 2 µl are injected and the response compared to that of the nearest internal standard. The computer determines a calibration factor for each of these five PAHs, performs a least squares analysis and provides a correlation coefficient and intercept. The correlation coefficient is at least 0.990 for an acceptable calibration curve.

TABLE 5-1

APPROXIMATE CALIBRATION SOLUTION CONCENTRATIONS (µg/ml)

Std. A	0.12
Std. B	0.50
Std. C	5.00
Std. D	25.0

Assuming that similar PAHs have similar ionization efficiencies, calibration curves are generated using the previously determined calibration factors. For example, phenanthrene and methylanthracene use the calibration factor for anthracene; fluoranthene, and methylpyrenes/fluoranthenes are referenced

to pyrene. Benzo(c)phenanthrene, benz(a)anthracene, dimethylbenzoanthracenes, and the methylated chrysenes, are referenced to chrysene. The benzofluoranthrenes, benzo(a)pyrene, benzo(e)pyrene, and methylbenzopyrenes are referenced to perylene. The methylcholanthrenes, benzo(g,h,i)perylene, dibenzoanthracenes, dibenzopyrenes and coronene all use the calibration factor determined for indeno(1,2,3-cd)pyrene.

Following the completion of the sample analyses, the validity of the calibration curve quantification was checked by analyzing the calibration solution, quantifying from the curves, and comparing the obtained value with the known value. Quantification within 15% of the true value was considered acceptable and required no reanalysis of the samples.

For organic analysis on each test, the filter and 1 µm cyclone particulates were combined as one sample, as were the 3 µm and the 10 µm cyclone particulates. The XAD-2 and XAD-2 module wash were analyzed together. All other wash solutions constituted one sample. The XAD-2 condensate comprised the fifth organic sample for each test.

5.2 INORGANIC ANALYSES

The principal instrument used for metal analysis during this study was a spark source mass spectrometer, AEI, Ltd. Model MS-702R, employing 2" x 12" Illford Q2 photoplates. In a typical analysis, solid samples were mixed with high purity graphite (Ultra-Carbon UCP-1) to yield a 40% mixture and pressed into conductive electrodes, 7/64-inch in diameter and 5/16-inch long. The sample electrodes were placed into the ion source and a series of mass spectra of varying sensitivities recorded on a photoplate. The exposures ranged from 30 to 0.001nC (10^{-9} coulomb) of charge. The spark voltage is 30KV with a 200 µsec pulse length at 300 pulses per second.

The photoplates were interpreted visually and using the appropriate weight base, ppm weight concentrations were determined. Those concentrations were corrected by sensitivity factors derived from separate analyses of standards.

Samples for inorganic analysis by atomic absorption spectrophotometry were prepared and analyzed as described in the IERL-RTP Procedure Manual: Level 1 Environmental Assessment (Second Edition, Section 8.2.5 through Section 8.3.2.2). (23)

Due to difficulties encountered in employing the method for antimony described under Section 8.3.2.3 (pp. 124-125), the graphite furnace/atomic absorption method has been used for all antimony determinations.

The samples were divided for organic and inorganic analyses. Half of each particulate sample, filter and cyclone, was used for testing. Two grams of XAD-2 was used for inorganic analysis, the remainder being extracted for organics. The aqueous condensate was extracted with methylene chloride for organics. The aqueous condensate and all impinger solutions were analyzed for inorganics. All blanks were analyzed for inorganic constituents.

For inorganic analysis, the samples from each test were combined in the manner shown in Table 5-2.

TABLE 5-2

COMBINATION AND PREPARATION OF
SAMPLE SUBSETS FOR INORGANIC ANALYSIS

Sample Designation		Analysis	Preparation
1st Cyclone Part. 2nd Cyclone Part.	combine	Hg & SSMS	Hg - Aqua regia digestion SSMS - Run as solid
3rd Cyclone Part. Filter (<3rd cyclone part.)	combine	Hg & SSMS	Remove particulates from filter if possible, otherwise digest filter in aqua regia. Run blank.
Filter blank		Hg & SSMS	
XAD-2		Hg & SSMS	1 g Parr bombed 100ml
XAD-2 blank		Hg & SSMS	1 g Parr bombed 100ml
Condensate extract 1st impinger	combine	Hg & SSMS	Run directly.
2nd impinger 3rd impinger	combine	Hg, Sb, As by AAS	$AgNO_3$ solution precipitate Ag before AAS analysis.
1st imp. blank (H_2O_2)		Hg & SSMS	
2nd & 3rd imp. blank		Hg, Sb, As	

6.0 DATA REDUCTION TECHNIQUES

Data reduction was assisted by using the University of Minnesota computer, due to the large data base and the amount of calculations that were needed to be performed. Seventy-four inorganic trace elements were studied and collected in four different locations of the SASS train such that 296 different trace element concentrations were calculated for each test. Twenty-one PAHs were studied and collected in five different sampling locations of the SASS train yielding 105 different PAH concentrations per test. The computer was programmed to put all the data into a much easier to read tabular form, computing averages, high and low results, and correlations with different test and boiler operating parameters. These results can be found in the appendices.

Organic and inorganic concentrations were reported to KVB in three different ways. Inorganic trace elements collected in the 3 cyclones, the XAD-2 module, or on filters were reported in concentrations of micrograms of element per gram of sample collected (μg/g). Trace elements collected in the condensate, impingers, and washes were reported in concentrations of micrograms of element per milliliter of sample(μg/ml). All organics were reported in concentrations of micrograms of organic compound per total sample collected (μg/sample). The inorganics were corrected to these same units by multiplying by either the sample weight or volume. Emission concentrations in μg/sample were converted to units of μg/dry scm, g/Kg of fuel input and ng/J of heat input, by the following formulas:

$$\frac{\mu g}{\text{dry SCM}} = \frac{\mu g}{\text{sample}} \times \frac{1}{\text{DSCM/sample}}$$

$$\frac{g}{Kg} = \frac{\mu g}{\text{DSCM}} \times \frac{g}{10^6 \mu g} \times \frac{\text{DSCM}}{35.31\ \text{DSCF}} \times F\frac{\text{DSCF}}{\text{million Btu}} \times \frac{\text{million Btu}}{10^6\ \text{Btu}} \times \frac{\text{Btu}}{\text{LB of coal}} \times 2.205\frac{LB}{Kg}$$

$$\frac{ng}{J} = \frac{\mu g}{\text{DSCM}} \times \frac{ng}{10^{-3} \mu g} \times \frac{\text{DSCM}}{35.31\ \text{DSCF}} \times F\frac{\text{DSCF}}{\text{million Btu}} \times \frac{\text{million Btu}}{10^6\ \text{Btu}} \times 0.000948\frac{\text{Btu}}{J} \times \frac{20.9}{20.0 - \%O_2}$$

where the Fuel factor, "F", is determined from an ultimate analysis of the coal fired during testing.

$$F_{\frac{DSCF}{Million\ Btu}} = \frac{10^6[1.53(\%C) + 3.61(\%H) + 0.14(\%N) + 0.57(\%S) - 0.46(\%O)]}{\text{Higher Heating Value, Btu/Lb of Coal}}$$

where: %C = % carbon content of coal fired
%H = % hydrogen content of coal fired
%N = % nitrogen content of coal fired
%S = % sulfur content of coal fired
%O = % oxygen content of coal fired

To make the analysis a litter easier, the SASS train stages were analyzed in 5 groups. The first two cyclones were combined, the last cyclone and the filter were combined, the condensate and impinger solutions were combined and the XAD-2 and the wash were analyzed separately. Total emissions were calculated by summing these 5 groups.

Total emissions = (1st cyclone + 2nd cyclone emissions) +
(3rd cyclone + filter emissions) + XAD-2 emissions +
condensate emissions + wash emissions

The computer was also programmed to calculate possible emission reductions by the addition of different pollution control devices, since all SASS tests were run before the multiclone dust collector, except those at Site J.

Reduced emissions by the addition of a multiclone dust collector were determined from a dust collector efficiency curve of a Universal Oil Products Company (UOP) design 6MP tubular dust collector. For tests at Sites A, B, and C, emissions were predicted to be reduced by 91.2% of the particulate matter caught in the 10-micrometer and 3-micrometer cyclones and by 25.0% of the particles caught in the 1-micrometer cyclone and on the filter. For tests at Sites D, F, G, H, I, and K (not J, since it was tested after the dust collector), emissions were predicted to be reduced by 96.8% of the 18.5 and 5.9 micrometer cyclone catch and 45.0% of the particules caught in the 1.4-micrometer cyclone and on the filter. 100% of the particles passing through the SASS train filter were predicted to pass through the dust collector.

Emissions were predicted to be reduced by 99.3% of all particulate matter caught on the filter of the SASS train and larger for all sites tested with the addition of an electrostatic precipitator. This is based on information found in the Electrostatic Precipitator Manual published by the McIlvaine Company, Northbrook, Illinois, (25) from test results at 8 different sites with ESPs averaging 99.3% collection efficiency. The manual also states that

particulate collection efficiency is lowest for particulates less than 0.3 micrometers in diameter. All particulate matter passing through the SASS train filter is less than 0.3 micrometers in diameter and assumed not to be collected by the ESP.

Reduced emissions by the addition of a baghouse were predicted from a curve supplied by Research-Cottrell. This curve is a plot of baghouse collection efficiency versus inlet loading in grains per actual cubic feet. From the average inlet loading of the spreader stokers with reinjection from the dust collector, the expected baghouse collection efficiency is 99.85%. For spreader stokers without reinjection from the dust collector, baghouse collection efficiency is 99.6%, and for mass-fired overfeed stokers, baghouse collection efficiency is 98.5%. As with the ESPs, all particulate matter passing through the filter (less than 0.3 ppm) is assumed to pass through the baghouse.

Some of the problems that were encountered during the data reduction can be seen from the wide variation in the data in Table 6-1. Table 6-1 lists the sum of all data, entered into the computer, at the different SASS train collection points for each individual SASS test run. The first two columns list the sum in grams of the inorganic trace elements and PAHs reported to KVB, per gram of sample analyzed. The last three columns list the sum in micrograms of the inorganic trace elements and PAHs, per sample analyzed as reported to KVB. Since the data were received in the two different sets of units, they were entered into the computer using those units.

By comparing the sums in a column, the much smaller sums show that little or in some cases no data was entered into the computer for that particular collection point and site. This can be seen from Tests A27, A40, the condensate from D22, the 1.4 μm cyclone and filter catch from K18 and the XAD-2 data for many sites.

From the first two columns, some of the data appears to be unrealistic, because more than one gram of the inorganic trace elements and PAHs were found in one gram of sample analyzed. Since some of the elements such as carbon, nitrogen, and oxygen were among the elements not analyzed, the sums greater than 0.6 g/g (60% by weight) appear also to be unrealistic. Carbon data from other tests during this same program averaged 20% for the mass fired overfeed stokers and about 50% for the spreader stokers tested.

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TABLE 6-1

SUMS OF DATA ENTERED AT THE DIFFERENT SASS TRAIN COLLECTION POINTS

	g/g		µg/SAMPLE		
Test	10µm + 3µm	1µm + Filter	Condensate	XAD-2	Wash
A27	3.3 E-8	9.7 E-6	3.7	1.6	17
A40	NONE	2.1 E-6	4.1	0.025	9.5
B30	0.048	0.24	1.0 E 6	7200	6.3
B31	0.069	0.37	1.1 E 6	4700	16
B33	0.079	0.35	1.9 E 6	3200	8.4
C44	0.92	0.72	3.1 E 5	3900	8.1
C45	0.90	0.62	3.3 E 5	5000	3.4
C46	0.80	0.41	7.8 E 5	5500	14
	18.5µm + 5.9µm	1.4µm + Filter	Condensate	XAD-2	Wash
D22	0.63	0.68	1.2	3100	29
E16	0.063	0.13	4.2 E 5	70	6.7
E17	0.074	0.23	6.2 E 4	76	3.2
F22	0.077	0.029	8.7 E 5	21	12
F30	0.077	0.028	3.4 E 5	660	3.5
G15	0.80	0.64	9.3 E 6	17	5.9
G20	0.69	0.53	9.3 E 6	10	5.1
H11	0.11	0.046	2.9 E 5	7.4	12
I9	0.53	0.21	7.4 E 7	14	10
I18	0.53	0.11	8.5 E 6	770	4.6
J15	1.1	0.10	7.7 E 6	2500	6.1
J16	1.3	0.12	1.2 E 7	1500	6.5
K18	0.65	NONE	1.7 E 6	6100	2.1

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Even though some of these numbers seem to be quite high, it must be remembered that EPA Level 1 procedures yield analytical results accurate to within a factor of three.

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APPENDIX A

COMPUTER GENERATED TABLES OF INORGANIC TRACE ELEMENT AND PAH EMISSIONS IN UNITS OF ng/J

	Page		Page		Page
Lithium	56	Niobium	88	Osmium	120
Beryllium	57	Molybdenum	89	Iridium	121
Boron	58	Ruthenium	90	Platinum	122
Fluorine	59	Rhodium	91	Gold	123
Sodium	60	Paladium	92	Mercury	124
Magnesium	61	Silver	93	Thallium	125
Aluminium	62	Cadmium	94	Lead	126
Silicon	63	Indium	95	Bismuth	127
Phosphorus	64	Tin	96	Thorium	128
Sulfur	65	Antimony	97	Uranium	129
Chlorine	66	Tellurium	98	Phenanthrene	130
Potassium	67	Iodine	99	Anthracene	131
Calcium	68	Cesium	100	Methylanthracenes/Phenanthrenes	132
Scandium	69	Barium	101	Fluoranthene	133
Titanium	70	Lanthanum	102	Pyrene	134
Vanadium	71	Cerium	103	Methylpyrene/Fluoranthene	135
Chromium	72	Praseodymium	104	Benzo(c)phenanthrene	136
Manganese	73	Neodymium	105	Benz(a)anathracene	137
Iron	74	Samarium	106	Chrysene	138
Cobalt	75	Europium	107	Methylchrysenes	139
Nickel	76	Gadolinium	108	Dimethylbenzanthracenes	140
Copper	77	Terbium	109	Benzfluoranthenes	141
Zinc	78	Dysprosium	110	Benzo(e)pyrene	142
Gallium	79	Holmium	111	Benzo(a)pyrene	143
Germanium	80	Erbium	112	Perylene	144
Arsenic	81	Thulium	113	Indeno(1,2,3-cd)pyrene	145
Selenium	82	Ytterbium	114	Benzo(g,h,i)perylene	146
Bromine	83	Lutetium	115	3-Methychlolanthrene	147
Rubidium	84	Hafnium	116	Dibendzpyrenes	148
Strontium	85	Tantalum	117	Coronene	149
Yttrium	86	Tungsten	118		
Zirconium	87	Rhenium	119	SUMMARY	150

LITHIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - EMISSIONS - - - - NG/J* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	3.5E-4	4.5E-2	5.7E-4	5.1E-3	5.1E-2	3.9E-2	6.0E-3	5.7E-3
B 31	6.0	2670	3.5E-4	3.4E-2	5.9E-4	5.3E-3	4.1E-2	3.2E-2	6.1E-3	5.9E-3
B 33	6.1	2130	3.3E-4	7.0E-2	5.9E-4	1.7E-2	8.8E-2	7.0E-2	1.8E-2	1.7E-2
C 44	8.9	4380	2.0E+0	6.4E-3	4.7E-5	0.0	2.0E+0	1.8E-1	1.4E-2	3.1E-3
C 45	8.3	4360	2.4E+0	6.9E-3	2.2E-4	0.0	2.4E+0	2.2E-1	1.7E-2	3.8E-3
C 46	9.0	3230	1.6E+0	8.2E-3	9.4E-5	0.0	1.6E+0	1.5E-1	1.1E-2	2.5E-3
AVERAGE			1.0E+0	2.8E-2	3.5E-4	4.5E-3	1.0E+0	1.1E-1	1.2E-2	6.4E-3
HIGH			2.4E+0	7.0E-2	5.9E-4	1.7E-2	2.4E+0	2.2E-1	1.8E-2	1.7E-2
LOW			3.3E-4	6.4E-3	4.7E-5	5.1E-3	4.1E-2	3.2E-2	6.0E-3	2.5E-3

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - EMISSIONS - - - - NG/J* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	7.7E-3	7.4E-3	0.0	0.0	1.5E-2	4.3E-3	1.1E-4	2.3E-4
E 16	8.3	2760	4.4E-3	5.2E-4	7.9E-5	0.0	5.0E-3	5.1E-4	1.1E-4	1.0E-4
E 17	6.2	2770	8.2E-3	2.7E-3	4.0E-5	0.0	1.1E-2	1.8E-3	1.2E-4	8.3E-5
F 22	6.0	2980	9.1E-3	3.2E-3	1.6E-4	0.0	1.2E-2	2.2E-3	2.4E-4	2.1E-4
F 30	6.8	2890	8.9E-3	1.0E-3	1.1E-5	0.0	1.0E-2	8.2E-4	8.0E-5	5.0E-5
G 15	8.7	3230	7.4E-2	1.3E-2	2.4E-5	0.0	8.7E-2	1.0E-2	6.3E-4	3.7E-4
G 20	3.2	2320	3.1E-2	1.2E-2	2.3E-4	0.0	4.3E-2	7.7E-3	5.3E-4	4.0E-4
H 11	9.4	1980	4.8E-3	1.0E-3	1.4E-4	0.0	5.9E-3	8.3E-4	1.8E-4	2.2E-4
I 09	5.9	2700	2.4E-2	6.7E-3	6.4E-3	0.0	3.7E-2	1.1E-2	6.6E-3	6.8E-3
I 18	7.8	1670	1.6E-2	1.7E-2	5.6E-4	1.1E-3	3.5E-2	1.2E-2	1.8E-3	2.1E-3
J 15	7.9	1550	7.0E-4	1.5E-2	2.3E-4	8.8E-4	1.7E-2	1.7E-2	1.2E-3	1.4E-3
J 16	8.9	2570	3.8E-4	1.6E-3	2.1E-4	0.0	2.2E-3	2.2E-3	2.2E-4	2.4E-4
K 18	9.8	1280	9.1E-3	0.0	2.5E-4	2.1E-4	1.0E-2	7.5E-4	5.3E-4	6.0E-4
AVERAGES										
SPREADER,NO REINJ FROM D.C.			2.3E-2	5.3E-3	9.0E-5	0.0	2.8E-2	3.8E-3	2.9E-4	2.0E-4
MASS FIRED OVERFEED			8.9E-3	7.0E-3	1.1E-3	3.1E-4	1.7E-2	6.8E-3	1.5E-3	1.7E-3
HIGH			7.4E-2	1.7E-2	6.4E-3	1.1E-3	8.7E-2	1.7E-2	6.6E-3	6.8E-3
LOW			3.8E-4	5.2E-4	1.1E-5	2.1E-4	2.2E-3	5.1E-4	8.0E-5	5.0E-5
CORRELATIONS WITH -										
FLUE GAS OXYGEN, PERCENT			0.05	0.04	-0.44	-0.02	0.02			
TOTAL ASH			0.42	-0.23	0.11	-0.64	0.29			
GRATE HEAT RELEASE			0.36	-0.12	-0.21	-0.34	0.25			
HYDROCARBONS			-0.18	-0.29	-0.10	-0.16	-0.24			
BOILER EFFICIENCY			-0.62	-0.28	-0.38	0.05	-0.62			
CARBON MONOXIDE			-0.21	-0.39	-0.18	-0.26	-0.38			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

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BERYLLIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - EMISSIONS - - - - NG/J* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210					1.3E-4			
A 35	6.0	3140					1.4E-3			
B 30	6.0	2710	1.8E-3	2.9E-3	2.9E-6	5.1E-5	4.7E-3	2.4E-3	8.6E-5	6.1E-5
B 31	6.0	2670	1.1E-2	3.2E-3	2.0E-6	5.3E-5	1.4E-2	3.4E-3	1.5E-4	7.6E-5
B 33	6.1	2130	2.6E-2	5.0E-3	2.0E-6	5.5E-5	3.1E-2	6.1E-3	2.7E-4	1.0E-4
C 44	8.9	4380	1.4E-2	3.0E-4	2.3E-7	0.0	1.4E-2	1.4E-3	1.0E-4	2.1E-5
C 45	8.3	4360	3.0E-2	3.7E-4	2.2E-7	1.7E-4	3.0E-2	3.1E-3	3.8E-4	2.1E-4
C 46	9.0	3230	2.7E-2	6.7E-4	2.3E-7	0.0	2.8E-2	2.9E-3	1.9E-4	4.2E-5
AVERAGE			1.4E-2	1.6E-3	9.4E-7	4.1E-5	1.5E-2	2.6E-3	3.4E-4	2.6E-4
HIGH			3.0E-2	5.0E-3	2.9E-6	1.7E-4	3.1E-2	6.1E-3	1.4E-3	1.4E-3
LOW			1.8E-3	3.0E-4	2.2E-7	5.1E-5	1.3E-4	1.3E-4	8.6E-5	2.1E-5

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - EMISSIONS - - - - NG/J* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	5.5E-4	2.5E-3	0.0	0.0	3.0E-3	1.4E-3	2.1E-5	4.6E-5
E 16	8.3	2760	3.3E-3	5.2E-4	1.0E-6	0.0	3.8E-3	3.9E-4	2.8E-5	1.6E-5
E 17	6.2	2770	9.1E-4	9.0E-4	6.0E-7	0.0	1.8E-3	5.3E-4	1.3E-5	7.9E-6
F 22	6.0	2580	3.0E-3	4.2E-4	2.5E-6	0.0	3.5E-3	3.3E-4	2.7E-5	1.6E-5
F 30	6.8	2890	8.9E-3	4.2E-4	5.4E-6	0.0	9.3E-3	5.2E-4	7.1E-5	4.3E-5
G 15	8.7	3230	2.2E-3	5.8E-4	1.0E-4	0.0	2.9E-3	4.9E-4	1.2E-4	1.1E-4
G 20	9.2	2320	3.1E-3	2.3E-4	1.9E-5	0.0	3.3E-3	2.5E-4	4.2E-5	3.2E-5
H 11	9.4	1980	1.6E-2	7.3E-4	5.5E-6	0.0	1.7E-2	9.2E-4	1.2E-4	2.5E-4
I 09	5.9	2700	4.7E-3	1.0E-3	2.1E-4	0.0	5.9E-3	9.2E-4	2.5E-4	3.8E-4
I 18	7.8	1670	6.5E-3	1.7E-3	5.6E-5	1.8E-5	8.3E-3	1.2E-3	1.3E-4	2.0E-4
J 15	7.9	1550	5.6E-4	9.2E-4	4.7E-5	5.9E-5	1.6E-3	1.6E-3	1.2E-4	1.3E-4
J 16	8.9	2570	6.1E-5	1.9E-3	5.3E-5	1.7E-5	2.1E-3	2.1E-3	8.3E-5	1.0E-4
K 18	9.8	1280	1.5E-3	0.0	2.8E-5	1.4E-4	1.7E-3	2.2E-4	1.8E-4	1.9E-4
AVERAGES										
SPREADER, NO REINJ FROM D.C.			3.6E-3	5.2E-4	2.2E-5	0.0	4.1E-3	4.2E-4	5.8E-5	3.8E-5
MASS FIRED OVERFEED			4.3E-3	1.3E-3	5.7E-5	3.3E-5	5.6E-3	1.2E-3	1.3E-4	1.7E-4
HIGH			1.6E-2	2.5E-3	2.1E-4	1.4E-4	1.7E-2	2.1E-3	2.5E-4	3.8E-4
LOW			6.1E-5	2.3E-4	6.0E-7	1.7E-5	1.6E-3	2.2E-4	1.3E-5	7.9E-6

CORRELATIONS WITH -					
FLUE GAS OXYGEN, PERCENT	-0.02	0.20	-0.30	0.34	0.01
TOTAL ASH	-0.04	-0.13	0.15	-0.71	-0.07
GRATE HEAT RELEASE	0.15	-0.60	-0.17	-0.42	0.05
HYDROCARBONS	0.82	-0.12	-0.21	-0.16	0.82
BOILER EFFICIENCY	-0.52	0.17	-0.48	0.22	-0.51
CARBON MONOXIDE	0.50	-0.28	-0.35	-0.26	0.46

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

BORON

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - - - - NG/J* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210					1.8E-1			
A 35	6.0	3140					2.8E-3			
B 33	6.0	2710	7.0E-2	3.7E-2	1.7E-2	1.5E-3	1.3E-1	5.3E-2	2.0E-2	1.9E-2
B 31	6.0	2670	2.1E-1	2.6E-2	5.9E-2	1.6E-3	3.0E-1	1.0E-1	6.2E-2	6.0E-2
B 33	6.1	2130	2.0E-1	3.7E-2	5.8E-2	1.7E-3	2.9E-1	1.0E-1	6.1E-2	6.0E-2
C 44	6.9	4380	5.4E+0	1.5E-1	7.0E-4	5.3E-2	5.6E+0	6.4E-1	9.3E-2	6.2E-2
C 45	6.3	4360	6.0E+0	1.2E-1	1.3E-3	5.1E-2	6.1E+0	6.7E-1	9.5E-2	6.1E-2
C 46	9.0	3230	1.1E+0	8.0E-2	7.0E-3	0.0	1.2E+0	1.6E-1	1.5E-2	8.8E-3
AVERAGE			1.6E+0	5.6E-2	1.8E-2	1.4E-2	1.7E+0	2.4E-1	6.6E-2	5.6E-2
HIGH			6.0E+0	1.5E-1	5.9E-2	5.3E-2	6.1E+0	6.7E-1	1.8E-1	1.8E-1
LOW			7.0E-2	2.6E-2	7.0E-4	1.5E-3	2.8E-3	2.8E-3	2.8E-3	2.8E-3

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - - - - NG/J* 18.9 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	3.1E-2	1.5E-1	0.0	0.0	1.8E-1	8.5E-2	1.3E-3	2.7E-3
E 16	8.3	2760	4.4E-2	1.2E-2	7.9E-2	0.0	1.3E-1	8.7E-2	8.0E-2	7.9E-2
E 17	6.2	2770	2.7E-2	3.6E-2	4.0E-4	0.0	6.4E-2	2.1E-2	8.4E-4	6.5E-4
F 22	6.0	2980	9.1E-3	4.2E-3	3.2E-3	0.0	1.7E-2	5.8E-3	3.3E-3	3.2E-3
F 30	6.8	2890	8.9E-3	2.1E-3	1.9E-3	0.0	1.3E-2	3.3E-3	2.0E-3	1.9E-3
G 15	8.7	3230	3.7E-2	1.9E-2	6.8E-2	0.0	1.2E-1	8.0E-2	6.9E-2	6.8E-2
G 23	9.2	2320	5.1E-2	1.2E-2	3.8E-2	0.0	1.0E-1	4.6E-2	3.8E-2	3.8E-2
H 11	9.4	1980	1.1E-1	1.0E-2	2.5E-2	0.0	1.4E-1	3.4E-2	2.6E-2	2.7E-2
I 09	5.9	2700	7.1E-2	1.0E-1	2.1E+0	0.0	2.3E+0	2.2E+0	2.1E+0	2.1E+0
I 18	7.8	1670	6.5E-2	3.5E-2	1.1E+0	3.2E-3	1.2E+0	1.1E+0	1.1E+0	1.1E+0
J 15	7.9	1550	7.0E-3	9.2E-2	4.7E-1	2.9E-5	5.7E-1	5.7E-1	4.7E-1	4.7E-1
J 16	8.9	2570	2.3E-4	1.0E-1	1.3E+0	1.0E-3	1.4E+0	1.4E+0	1.3E+0	1.3E+0
K 18	9.8	1280	9.1E-2	0.0	2.8E-1	2.1E-2	3.9E-1	3.0E-1	3.0E-1	3.0E-1
AVERAGES										
SPREADER, NO REINJ FROM D.C.			3.0E-2	1.4E-2	3.2E-2	0.0	7.6E-2	4.1E-2	3.2E-2	3.2E-2
MASS FIRED OVERFEED			5.3E-2	7.0E-2	7.6E-1	3.6E-3	8.9E-1	8.2E-1	7.6E-1	7.7E-1
HIGH			1.1E-1	1.5E-1	2.1E+0	2.1E-2	2.3E+0	2.2E+0	2.1E+0	2.1E+0
LOW			2.3E-4	2.1E-3	4.0E-4	2.9E-5	1.3E-2	3.3E-3	8.4E-4	6.5E-4
CORRELATIONS WITH -										
FLUE GAS OXYGEN, PERCENT			0.33	0.13	-0.28	0.35	-0.24			
TOTAL ASH			-0.44	-0.15	-0.08	-0.59	-0.11			
GRATE HEAT RELEASE			-0.33	-0.68	-0.42	-0.34	-0.47			
HYDROCARBONS			0.52	-0.26	-0.21	-0.12	-0.20			
BOILER EFFICIENCY			-0.66	0.30	-0.27	0.01	-0.27			
CARBON MONOXIDE			-0.17	-0.40	-0.36	-0.19	-0.38			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15918-564

FLUORINE

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - - - - NG/J* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	1.8E-3	8.4E-4	1.1E-3	2.0E-2	2.4E-2	2.2E-2	2.2E-2	2.1E-2
B 31	6.0	2670	3.5E-3	4.7E-4	2.9E-3	2.1E-2	2.8E-2	2.5E-2	2.4E-2	2.4E-2
B 33	6.1	2130	3.3E-3	8.2E-4	5.9E-4	2.2E-3	6.9E-3	3.7E-3	2.8E-3	2.8E-3
C 44	8.9	4380	2.0E-2	2.6E-3	1.2E-3	5.9E-4	2.5E-2	5.5E-3	1.9E-3	1.8E-3
C 45	8.3	4360	1.8E-2	3.3E-3	1.3E-3	3.4E-3	2.6E-2	8.8E-3	4.9E-3	4.8E-3
C 46	9.0	3230	1.1E-2	4.3E-3	4.7E-5	0.0	1.5E-2	4.2E-3	1.5E-4	6.9E-5
AVERAGE			1.0E-2	2.1E-3	1.2E-3	7.9E-3	2.1E-2	1.2E-2	9.2E-3	9.2E-3
HIGH			2.0E-2	4.3E-3	2.9E-3	2.1E-2	2.8E-2	2.5E-2	2.4E-2	2.4E-2
LOW			1.8E-3	4.7E-4	4.7E-5	5.9E-4	6.9E-3	3.7E-3	1.5E-4	6.9E-5

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - - - - NG/J* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	1.9E-3	6.0E-4	0.0	0.0	2.1E-3	3.8E-4	1.5E-5	3.2E-5
E 16	8.3	2760	2.2E-3	2.6E-4	7.9E-4	0.0	3.2E-3	1.0E-3	8.1E-4	8.8E-4
E 17	6.2	2770	8.2E-3	8.1E-4	1.2E-4	0.0	9.1E-3	8.3E-4	1.8E-4	1.6E-4
F 22	6.0	2980	1.8E-3	1.1E-3	1.6E-3	0.0	4.5E-3	2.2E-3	1.6E-3	1.6E-3
F 30	6.8	2890	1.3E-3	1.1E-3	5.4E-4	0.0	2.9E-3	1.2E-3	5.6E-4	5.5E-4
G 15	8.7	3230	2.2E-3	1.9E-3	6.8E-4	0.0	4.8E-3	1.8E-3	7.1E-4	7.0E-4
G 20	9.2	2320	1.0E-3	5.9E-4	1.5E-3	0.0	3.1E-3	1.9E-3	1.5E-3	1.5E-3
H 11	9.4	1980	1.1E-3	1.5E-4	2.5E-3	0.0	3.7E-3	2.6E-3	2.5E-3	2.5E-3
I 09	5.9	2700	1.6E-3	6.7E-4	4.2E-2	0.0	4.5E-2	4.3E-2	4.2E-2	4.2E-2
I 18	7.8	1670	1.3E-3	1.2E-3	2.8E-3	7.0E-3	1.2E-2	1.0E-2	1.0E-2	1.0E-2
J 15	7.9	1550	1.4E-4	3.1E-4	2.3E-3	2.9E-3	5.7E-3	5.7E-3	5.3E-3	5.3E-3
J 16	8.9	2570	5.3E-5	3.2E-4	5.3E-3	3.3E-1	9.0E-3	9.0E-3	8.6E-3	8.6E-3
K 18	9.8	1280	1.2E-3	0.0	2.8E-2	2.8E-2	5.7E-2	5.6E-2	5.6E-2	5.6E-2
AVERAGES										
SPREADER,NO REINJ FROM D.C.			2.8E-3	1.0E-3	8.7E-4	0.0	4.6E-3	1.5E-3	9.0E-4	8.9E-4
MASS FIRED OVERFEED			1.0E-3	4.6E-4	1.2E-2	5.9E-3	1.9E-2	1.8E-2	1.8E-2	1.8E-2
HIGH			8.2E-3	1.9E-3	4.2E-2	2.8E-2	5.7E-2	5.6E-2	5.6E-2	5.6E-2
LOW			5.3E-5	1.5E-4	1.2E-4	2.9E-3	2.1E-3	3.8E-4	1.5E-5	3.2E-5
CORRELATIONS WITH -										
FLUE GAS OXYGEN, PERCENT			-0.43	-0.36	-0.18	0.35	-0.03			
TOTAL ASH			0.35	0.59	-0.19	-0.66	-0.37			
GRATE HEAT RELEASE			0.36	0.58	-0.37	-0.40	-0.39			
HYDROCARBONS			-0.12	-0.27	-0.12	-0.15	-0.16			
BOILER EFFICIENCY			0.20	-0.34	-0.24	0.04	-0.18			
CARBON MONOXIDE			-0.10	0.16	-0.24	-0.23	-0.29			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15918-564

SODIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J SODIUM	*- - - EMISSIONS - - - - NG/J* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	15.5	1.4E+0	1.1E+0	5.7E-1	5.1E+0	8.2E+0	6.6E+0	5.7E+0	5.7E+0
B 31	6.0	2670	12.5	1.4E+0	5.7E-1	2.0E+0	5.3E+0	9.3E+0	7.9E+0	7.3E+0	7.3E+0
B 33	6.1	2130	7.4	3.3E+0	7.9E-1	5.8E-1	1.1E+0	5.7E+0	2.6E+0	1.7E+0	1.7E+0
C 44	9.9	4380	14.6	4.1E+1	2.0E+0	2.3E-1	2.9E-1	4.3E+1	5.6E+0	8.3E-1	5.9E-1
C 45	8.3	4360	19.4	6.0E+1	3.6E+0	2.2E-1	2.3E-1	6.4E+1	8.4E+0	8.9E-1	5.4E-1
C 46	9.0	3230	14.4	3.2E+1	4.1E+0	1.4E-1	3.0E-1	3.7E+1	6.4E+0	6.9E-1	4.9E-1
AVERAGE				2.3E+1	2.0E+0	6.3E-1	2.0E+0	2.8E+1	6.2E+0	2.9E+0	2.7E+0
HIGH				6.0E+1	4.1E+0	2.0E+0	5.3E+0	6.4E+1	8.4E+0	7.3E+0	7.3E+0
LOW				1.4E+0	5.7E-1	1.4E-1	2.3E-1	5.7E+0	2.6E+0	6.9E-1	4.9E-1

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J SODIUM	*- - - EMISSIONS - - - - NG/J* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	8.3	4.6E-1	1.6E+0	0.0	0.0	2.0E+0	8.7E-1	1.4E-2	3.0E-2
E 16	8.3	2760	5.1	1.1E-1	3.9E-2	2.0E-2	0.0	1.7E-1	4.5E-2	2.1E-2	2.0E-2
E 17	6.2	2770	5.3	9.1E-1	2.7E-1	4.0E-2	0.0	1.2E+0	2.2E-1	4.8E-2	4.4E-2
F 22	6.0	2980	7.7	3.0E-1	3.2E-1	2.2E-1	0.0	8.4E-1	4.1E-1	2.3E-1	2.2E-1
F 33	6.8	2890	9.4	1.8E-1	4.2E-1	5.4E-2	0.0	6.6E-1	2.9E-1	5.8E-2	5.7E-2
G 15	8.7	3230	11.5	7.4E+0	1.3E+0	2.0E-1	0.0	8.9E+0	1.2E+0	2.7E-1	2.4E-1
G 20	9.2	2320	5.3	1.0E+0	1.2E+0	1.1E-1	0.0	2.3E+0	7.9E-1	1.3E-1	1.2E-1
H 11	9.4	1980	3.4	1.6E+0	7.3E-2	5.5E-1	0.0	2.2E+0	6.5E-1	5.7E-1	5.8E-1
I 09	5.9	2700	6.6	2.4E+0	1.7E+0	1.3E-1	0.0	4.2E+0	1.1E+0	1.6E-1	1.9E-1
I 18	7.8	1670	11.9	3.3E-1	5.8E+0	1.7E-1	1.8E-2	6.3E+0	3.4E+0	2.3E-1	2.8E-1
J 15	7.9	1550	9.2	1.4E-1	3.1E-1	1.2E+0	2.9E+0	4.6E+0	4.6E+0	4.1E+0	4.1E+0
J 16	8.9	2570	6.7	1.5E-1	1.6E+0	1.3E+0	0.0	3.1E+0	3.1E+0	1.3E+0	1.3E+0
K 18	9.8	1280	2.4	1.8E-1	0.0	8.4E-1	1.1E+0	2.1E+0	1.9E+0	1.9E+0	1.9E+0
AVERAGES											
SPREADER,NO REINJ FROM D.C.				1.6E+0	5.9E-1	1.1E-1	0.0	2.3E+0	4.8E-1	1.2E-1	1.2E-1
MASS FIRED OVERFEED				7.4E-1	1.6E+0	6.0E-1	5.7E-1	3.5E+0	2.2E+0	1.2E+0	1.2E+0
HIGH				7.4E+0	5.8E+0	1.3E+0	2.9E+0	8.9E+0	4.6E+0	4.1E+0	4.1E+0
LOW				1.1E-1	3.9E-2	2.0E-2	1.8E-2	1.7E-1	4.5E-2	1.4E-2	2.0E-2
CORRELATIONS WITH -											
FLUE GAS OXYGEN, PERCENT				0.04	-0.01	0.29	0.08	0.11			
TOTAL ASH				0.45	-0.20	-0.46	-0.58	-0.05			
ASH SODIUM				0.34	0.60	-0.18	0.03	0.62			
GRATE HEAT RELEASE				0.29	-0.28	-0.41	-0.30	-0.12			
HYDROCARBONS				0.04	-0.23	0.10	-0.13	-0.14			
BOILER EFFICIENCY				-0.56	-0.43	0.32	0.47	-0.50			
CARBON MONOXIDE				-0.17	-0.29	-0.17	-0.21	-0.42			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15918-564

MAGNESIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J MAGNESIUM	*- - - EMISSIONS - - - - NG/J* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	14.2	1.4E+0	6.9E-1	5.7E-2	2.5E+0	4.7E+0	3.2E+0	2.6E+0	2.6E+0
B 31	6.0	2670	16.9	3.5E+0	1.4E+0	1.5E-1	2.6E+0	7.8E+0	4.2E+0	2.8E+0	2.8E+0
B 33	6.1	2130	8.7	3.3E+0	1.2E+0	5.8E-2	1.1E+0	5.6E+0	2.4E+0	1.2E+0	1.2E+0
C 44	8.9	4380	95.2	3.4E+2	1.2E+1	2.3E-2	2.9E-1	3.5E+2	3.9E+1	2.8E+0	8.4E-1
C 45	8.3	4360	106.3	3.0E+2	3.9E+0	2.2E-2	1.1E+0	3.0E+2	3.0E+1	3.3E+0	1.6E+0
C 46	9.0	3230	17.6	2.7E+2	3.8E+0	4.7E-2	1.8E+0	2.8E+2	2.8E+1	3.7E+0	2.2E+0
AVERAGE				1.5E+2	3.9E+0	5.9E-2	1.6E+0	1.6E+2	1.8E+1	2.7E+0	1.9E+0
HIGH				3.4E+2	1.2E+1	1.5E-1	2.6E+0	3.5E+2	3.9E+1	3.7E+0	2.8E+0
LOW				1.4E+0	6.9E-1	2.2E-2	2.9E-1	4.7E+0	2.4E+0	1.2E+0	8.4E-1

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J MAGNESIUM	*- - - EMISSIONS - - - - NG/J* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2870	10.7	3.1E-1	8.6E-2	0.0	0.0	3.9E-1	5.7E-2	2.7E-3	5.9E-3
E 16	8.3	2760	14.6	1.1E-1	9.2E-2	2.0E-3	0.0	2.0E-1	5.6E-2	3.4E-3	2.8E-3
E 17	6.2	2770	12.9	9.1E-1	6.3E-2	1.0E-3	0.0	1.0E+0	6.5E-2	7.8E-3	4.9E-3
F 22	6.0	2980	11.5	2.1E-1	7.4E-2	6.3E-3	0.0	2.9E-1	5.4E-2	8.3E-3	7.5E-3
F 30	6.8	2890	12.9	2.2E-1	1.1E-1	1.9E-2	0.0	3.5E-1	8.4E-2	2.1E-2	2.0E-2
G 15	8.7	3230	21.2	6.6E+0	5.2E-1	2.4E-2	0.0	7.2E+0	5.2E-1	7.4E-2	5.2E-2
G 20	9.2	2320	11.8	2.1E+0	4.7E-1	2.3E-2	0.0	2.5E+0	3.5E-1	4.0E-2	3.3E-2
H 11	9.4	1980	7.4	5.3E-1	2.4E-2	2.2E-2	0.0	5.7E-1	5.2E-2	2.6E-2	3.0E-2
I 09	5.9	2700	13.2	9.4E-1	1.3E-1	2.1E-2	0.0	1.1E+0	1.3E-1	2.9E-2	3.7E-2
I 18	7.8	1670	7.6	2.6E-1	5.8E-2	2.8E-2	3.5E-2	3.8E-1	1.0E-1	6.5E-2	6.8E-2
J 15	7.9	1550	7.3	5.6E-2	2.5E-2	2.3E-2	1.2E-1	2.2E-1	2.2E-1	1.4E-1	1.4E-1
J 16	8.9	2570	12.9	3.1E-2	6.5E-2	9.3E-2	0.0	1.5E-1	1.5E-1	5.3E-2	5.4E-2
K 18	9.8	1280	12.1	3.0E+0	0.0	1.4E-1	7.0E-1	3.9E+0	9.4E-1	8.7E-1	8.9E-1
AVERAGES											
SPREADER, NO REINJ FROM D.C.				1.7E+0	2.2E-1	1.2E-2	0.0	1.9E+0	1.9E-1	2.6E-2	2.0E-2
MASS FIRED OVERFEED				7.4E-1	5.6E-2	4.1E-2	1.2E-1	1.0E+0	2.4E-1	1.7E-1	1.8E-1
HIGH				6.6E+0	5.2E-1	1.4E-1	7.0E-1	7.2E+0	9.4E-1	8.7E-1	8.9E-1
LOW				3.1E-2	2.4E-2	1.0E-3	3.5E-2	1.5E-1	5.2E-2	2.7E-3	2.8E-3
CORRELATIONS WITH -											
FLUE GAS OXYGEN, PERCENT				0.26	0.14	0.40	0.34	0.28			
TOTAL ASH				0.20	0.46	-0.55	-0.63	0.15			
ASH MAGNESIUM				0.72	0.64	-0.01	-0.08	0.70			
GRATE HEAT RELEASE				0.25	0.44	-0.35	-0.35	0.22			
HYDROCARBONS				-0.13	-0.21	-0.08	-0.12	-0.15			
BOILER EFFICIENCY				-0.46	-0.51	-0.05	0.11	-0.45			
CARBON MONOXIDE				-0.27	-0.21	-0.22	-0.19	-0.29			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

ALUMINUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J ALUMINUM	EMISSIONS NG/J 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	420.7	7.0E+1	3.6E+0	1.4E-1	5.1E-2	7.4E+1	9.0E+0	7.1E-1	3.0E-1
B 31	6.0	2670	444.1	2.5E+1	7.3E+0	8.8E-2	5.3E-2	3.2E+1	7.8E+0	3.6E-1	1.9E-1
B 33	6.1	2130	338.2	9.8E+1	1.2E+1	5.8E-2	5.5E-2	1.1E+2	1.8E+1	8.8E-1	2.8E-1
C 44	8.9	4380	391.0	2.0E+3	1.1E+1	2.3E-2	5.6E-1	2.0E+3	1.9E+2	1.5E+1	3.6E+0
C 45	8.3	4360	428.8	1.8E+3	9.8E+0	4.5E-2	2.0E-1	1.8E+3	1.6E+2	1.3E+1	2.9E+0
C 46	9.0	3230	370.4	1.6E+3	1.3E+1	2.1E-2	2.3E+0	1.6E+3	1.5E+2	1.4E+1	4.8E+0
AVERAGE				9.4E+2	9.5E+0	6.3E-2	5.4E-1	9.5E+2	9.8E+1	7.2E+0	2.0E+0
HIGH				2.0E+3	1.3E+1	1.4E-1	2.3E+0	2.0E+3	1.9E+2	1.5E+1	4.8E+0
LOW				2.5E+1	3.6E+0	2.1E-2	5.1E-2	3.2E+1	7.8E+0	3.6E-1	1.9E-1

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J ALUMINUM	EMISSIONS NG/J 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	327.7	1.1E+1	2.3E+0	0.0	0.0	1.4E+1	1.6E+0	1.0E-1	2.1E-1
E 16	8.3	2760	529.0	2.2E+1	7.8E+0	2.0E-2	0.0	3.0E+1	5.0E+0	2.3E-1	1.4E-1
E 17	6.2	2770	463.9	1.8E+1	5.4E+0	1.6E-2	0.0	2.4E+1	3.6E+0	1.8E-1	1.1E-1
F 22	6.0	2980	515.3	9.1E+1	3.2E+0	6.3E-2	0.0	9.4E+1	4.7E+0	7.2E-1	4.4E-1
F 30	6.8	2890	499.1	6.7E+1	3.2E+0	5.4E-2	0.0	7.0E+1	3.9E+0	5.4E-1	3.3E-1
G 15	8.7	3230	538.2	2.6E+2	2.3E+1	1.0E-1	0.0	2.8E+2	2.1E+1	2.1E+0	1.2E+0
G 20	9.2	2320	463.8	3.6E+2	2.1E+1	1.1E-1	0.0	3.8E+2	2.3E+1	2.8E+0	1.6E+0
H 11	9.4	1980	244.6	1.1E+1	4.9E-1	1.1E-1	0.0	1.1E+1	7.2E-1	1.9E-1	2.8E-1
I 09	5.9	2730	329.5	3.5E+1	2.7E+0	6.4E-1	0.0	3.9E+1	3.2E+0	9.0E-1	1.2E+0
I 18	7.8	1670	223.5	4.9E+1	5.8E+0	2.8E-1	3.5E-5	5.5E+1	5.0E+0	6.6E-1	1.1E+0
J 15	7.9	1550	216.4	3.5E+0	9.2E-1	4.7E-1	0.0	4.9E+0	4.9E+0	5.0E-1	5.3E-1
J 16	8.9	2570	361.7	1.9E+0	1.0E+0	7.9E-1	0.0	3.7E+0	3.7E+0	6.1E-1	6.3E-1
K 18	9.8	1280	177.2	1.4E+2	0.0	2.8E-1	7.0E-1	1.4E+2	5.4E+0	1.9E+0	3.0E+0
AVERAGES											
SPREADER, NO REINJ FROM D.C.				1.4E+2	1.0E+1	6.2E-2	0.0	1.5E+2	1.0E+1	1.1E+0	6.5E-1
MASS FIRED OVERFEED				3.6E+1	1.9E+0	3.7E-1	1.0E-1	3.8E+1	3.5E+0	7.3E-1	1.0E+0
HIGH				3.6E+2	2.3E+1	7.9E-1	7.0E-1	3.8E+2	2.3E+1	2.8E+0	3.0E+0
LOW				1.9E+0	4.9E-1	1.6E-2	3.5E-5	3.7E+0	7.2E-1	1.0E-1	1.1E-1
CORRELATIONS WITH -											
FLUE GAS OXYGEN, PERCENT				0.23	0.13	-0.07	0.35	0.22			
TOTAL ASH				0.16	0.43	-0.21	-0.54	0.18			
ASH ALUMINUM				0.35	0.57	-0.45	-0.45	0.36			
GRATE HEAT RELEASE				0.41	0.49	-0.45	-0.30	0.41			
HYDROCARBONS				-0.19	-0.24	-0.17	-0.10	-0.20			
BOILER EFFICIENCY				-0.48	-0.48	0.00	0.05	-0.49			
CARBON MONOXIDE				-0.10	-0.26	-0.35	-0.16	-0.12			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15918-564

SILICON

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J SILICON	*- - - EMISSIONS - - - - NG/J* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	785.8	7.0E+1	6.5E+0	2.9E-1	1.5E-1	7.7E+1	1.1E+1	1.0E+0	5.5E-1
B 31	6.0	2670	657.6	1.8E+2	1.4E+1	2.9E-1	1.6E-1	1.9E+2	2.7E+1	1.8E+0	7.4E-1
B 33	6.1	2130	539.3	9.8E+1	2.4E+1	8.7E-2	2.2E-1	1.2E+2	2.7E+1	1.2E+0	4.9E-1
C 44	8.9	4380	893.9	2.0E+3	1.1E+1	2.1E-1	1.8E+0	2.0E+3	1.9E+2	1.6E+1	5.0E+0
C 45	8.3	4360	889.6	1.8E+3	5.9E+0	6.7E-1	5.6E-1	1.8E+3	1.6E+2	1.4E+1	3.9E+0
C 46	9.0	3230	661.6	1.6E+3	1.1E+1	2.3E-2	2.4E+0	1.6E+3	1.5E+2	1.4E+1	4.8E+0
AVERAGE				9.6E+2	1.2E+1	2.6E-1	8.7E-1	9.8E+2	9.5E+1	8.0E+0	2.6E+0
HIGH				2.0E+3	2.4E+1	6.7E-1	2.4E+0	2.0E+3	1.9E+2	1.6E+1	5.0E+0
LOW				7.0E+1	5.9E+0	2.3E-2	1.5E-1	7.7E+1	1.1E+1	1.0E+0	4.9E-1

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J SILICON	*- - - EMISSIONS - - - - NG/J* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2670	481.3	1.1E+1	2.3E+0	0.0	0.0	1.4E+1	1.6E+0	1.0E-1	2.1E-1
E 16	8.3	2760	641.6	2.2E+1	6.5E+0	2.0E-1	0.0	2.9E+1	4.5E+0	4.0E-1	3.1E-1
E 17	6.2	2770	681.2	2.7E+1	9.0E+0	2.0E-2	0.0	3.6E+1	5.9E+0	2.7E-1	1.7E-1
F 22	6.0	2980	576.9	6.1E+1	2.1E+0	3.8E-1	0.0	6.3E+1	3.5E+0	8.2E-1	6.3E-1
F 30	6.8	2890	647.3	4.5E+1	2.1E+0	8.1E-2	0.0	4.7E+1	2.7E+0	4.1E-1	2.7E-1
G 15	8.7	3230	796.8	2.6E+2	2.3E+1	1.0E-1	0.0	2.8E+2	2.1E+1	2.1E+0	1.2E+0
G 20	9.2	2320	538.5	2.6E+2	2.1E+1	1.1E-1	0.0	2.8E+2	2.0E+1	2.1E+0	1.2E+0
H 11	9.4	1980	368.2	5.3E+0	4.9E-1	2.5E-1	0.0	6.0E+0	6.9E-1	2.9E-1	3.4E-1
I 09	5.9	2700	491.8	1.4E+1	8.4E+0	1.3E+0	0.0	2.4E+1	6.4E+0	1.4E+0	1.6E+0
I 18	7.8	1670	332.9	2.0E+1	2.3E+0	8.3E-1	1.4E-3	2.3E+1	2.7E+0	1.0E+0	1.2E+0
J 15	7.9	1550	318.5	3.5E+0	1.2E+0	1.2E+0	0.0	5.9E+0	5.9E+0	1.2E+0	1.2E+0
J 16	8.9	2570	510.3	1.9E+0	1.3E+0	1.3E+0	0.0	4.5E+0	4.5E+0	1.3E+0	1.4E+0
K 18	9.8	1280	228.7	4.6E+1	0.0	2.2E-1	7.8E-1	4.7E+1	2.4E+0	1.2E+0	1.6E+0
AVERAGES											
SPREADER, NO REINJ FROM D.C.				1.1E+2	1.1E+1	1.5E-1	0.0	1.2E+2	9.5E+0	1.0E+0	6.4E-1
MASS FIRED OVERFEED				1.5E+1	2.3E+0	7.2E-1	1.0E-1	1.8E+1	3.5E+0	9.4E-1	1.1E+0
HIGH				2.6E+2	2.3E+1	1.3E+0	7.0E-1	2.8E+2	2.1E+1	2.1E+0	1.6E+0
LOW				1.9E+0	4.9E-1	2.0E-2	1.4E-3	4.5E+0	6.9E-1	1.0E-1	1.7E-1
CORRELATIONS WITH -											
FLUE GAS OXYGEN, PERCENT				0.18	0.01	-0.24	0.35	0.17			
TOTAL ASH				0.34	0.49	-0.20	-0.54	0.36			
ASH SILICON				0.46	0.62	-0.39	-0.51	0.48			
GRATE HEAT RELEASE				0.49	0.45	-0.41	-0.30	0.49			
HYDROCARBONS				-0.18	-0.26	-0.14	-0.10	-0.19			
BOILER EFFICIENCY				-0.47	-0.46	0.02	0.05	-0.47			
CARBON MONOXIDE				-0.12	-0.33	-0.25	-0.16	-0.14			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15918-564

PHOSPHORUS

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J PHOSPHORUS	EMISSIONS NG/J 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	4.5	3.5E-1	5.1E-1	1.7E-3	5.1E-1	1.4E+0	9.3E-1	5.2E-1	5.1E-1
B 31	6.0	2670	5.1	1.1E+0	4.7E-1	1.8E-3	5.3E-1	2.1E+0	1.0E+0	5.4E-1	5.3E-1
B 33	6.1	2130	5.8	1.0E+0	6.9E-1	1.7E-3	2.2E-1	1.9E+0	8.2E-1	2.4E-1	2.3E-1
C 44	8.9	4380	4.0	1.4E+1	3.0E-1	2.3E-3	2.7E+0	1.7E+1	4.1E+0	2.8E+0	2.7E+0
C 45	8.3	4360	3.4	6.0E+0	1.9E-1	4.5E-2	8.2E+0	1.4E+1	8.9E+0	8.3E+0	8.3E+0
C 46	9.0	3230	3.0	5.4E+0	5.6E-1	1.4E-2	2.7E+0	8.7E+0	3.6E+0	2.8E+0	2.7E+0
AVERAGE				4.5E+0	4.5E-1	1.1E-2	2.5E+0	7.5E+0	3.2E+0	2.5E+0	2.5E+0
HIGH				1.4E+1	6.9E-1	4.5E-2	8.2E+0	1.7E+1	8.9E+0	8.3E+0	8.3E+0
LOW				3.5E-1	1.9E-1	1.7E-3	2.2E-1	1.4E+0	8.2E-1	2.4E-1	2.3E-1

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J PHOSPHORUS	EMISSIONS NG/J 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	3.2	4.6E-1	6.3E-1	0.0	0.0	1.1E+0	3.6E-1	7.6E-3	1.6E-2
E 16	8.3	2760	5.2	1.1E-1	1.2E-1	2.0E-3	0.0	2.3E-1	7.0E-2	3.6E-3	2.9E-3
E 17	6.2	2770	2.2	8.2E-1	1.8E-1	2.0E-4	0.0	1.0E+0	1.3E-1	7.2E-3	4.2E-3
F 22	6.0	2980	10.7	9.1E-1	1.0E-1	6.3E-3	0.0	1.0E+0	8.8E-2	1.3E-2	1.0E-2
F 33	6.8	2890	5.7	6.7E-1	1.0E-1	1.4E-3	0.0	7.6E-1	7.5E-2	6.7E-3	4.4E-3
G 15	8.7	3230	2.8	1.5E-1	6.5E-2	3.1E-3	0.0	2.2E-1	4.3E-2	4.6E-3	3.9E-3
G 20	9.2	2320	1.5	7.2E-2	2.9E-1	7.5E-3	0.0	3.7E-1	1.7E-1	1.0E-2	9.3E-3
H 11	9.4	1980	5.7	5.3E-1	1.0E-1	8.3E-3	0.0	6.3E-1	7.9E-2	1.3E-2	1.8E-2
I 09	5.9	2700	4.0	4.7E-1	6.7E-1	4.2E-2	0.0	1.2E+0	4.3E-1	5.0E-2	6.0E-2
I 18	7.8	1670	1.9	1.6E-1	3.5E-1	8.3E-3	3.5E-5	5.2E-1	2.8E-1	1.2E-2	1.6E-2
J 15	7.9	1550	2.1	2.8E-2	9.2E-1	2.3E-2	<1.0E-9	1.0E+0	1.0E+0	3.0E-2	3.8E-2
J 16	8.9	2570	4.5	3.8E-3	2.6E-1	1.1E-2	0.0	2.7E-1	2.7E-1	1.2E-2	1.4E-2
K 18	9.8	1280	0.6	1.2E-1	0.0	5.6E-2	1.8E-2	2.0E-1	7.7E-2	7.4E-2	7.5E-2
AVERAGES SPREADER, NO REINJ FROM D.C.				4.5E-1	1.4E-1	3.4E-3	0.0	6.0E-1	1.8E-1	7.6E-3	5.8E-3
MASS FIRED OVERFEED				2.5E-1	4.2E-1	2.1E-2	2.5E-3	7.0E-1	3.4E-1	2.8E-2	3.4E-2
HIGH				9.1E-1	9.2E-1	5.6E-2	1.8E-2	1.2E+0	1.8E+0	7.4E-2	7.5E-2
LOW				3.8E-3	6.5E-2	2.0E-4	<1.0E-9	2.0E-1	4.3E-2	3.6E-3	2.9E-3
CORRELATIONS WITH -											
FLUE GAS OXYGEN, PERCENT				-0.60	-0.07	0.04	0.35	-0.55			
TOTAL ASH				0.42	-0.33	-0.51	-0.54	0.07			
ASH PHOSPHORUS				0.61	-0.23	-0.32	-0.36	0.31			
GRATE HEAT RELEASE				0.44	-0.54	-0.45	-0.30	-0.86			
HYDROCARBONS				0.27	-0.25	-0.11	-0.10	0.03			
BOILER EFFICIENCY				0.13	0.24	-0.11	0.05	0.29			
CARBON MONOXIDE				0.70	-0.36	-0.27	-0.16	0.31			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15918-564

SULFUR

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J SULFUR	*- - - EMISSIONS - - - - NG/J* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	282.7	1.4E+0	3.4E+0	8.6E+0	1.0E+0	1.4E+1	1.2E+1	9.7E+0	9.6E+0
B 31	6.0	2670	303.8	1.4E+0	2.0E+0	8.8E+0	1.1E+0	1.3E+1	1.1E+1	9.9E+0	9.8E+0
B 33	6.1	2130	248.7	3.3E+0	1.9E+0	8.7E+0	1.1E+0	1.5E+1	1.2E+1	9.8E+0	9.8E+0
C 44	8.9	4380	274.3	2.0E+1	4.2E+0	3.5E+0	2.4E+0	3.0E+1	1.1E+1	6.0E+0	5.9E+0
C 45	8.3	4360	274.3	1.8E+1	3.2E+0	3.4E+0	0.0	2.4E+1	7.4E+0	3.5E+0	3.4E+0
C 46	9.0	3230	860.5	2.2E+1	3.3E+0	1.1E+1	2.4E+0	3.8E+1	1.7E+1	1.3E+1	1.3E+1
AVERAGE				1.1E+1	3.0E+0	7.2E+0	1.3E+0	2.3E+1	1.2E+1	8.7E+0	8.6E+0
HIGH				2.2E+1	4.2E+0	1.1E+1	2.4E+0	3.8E+1	1.7E+1	1.3E+1	1.3E+1
LOW				1.4E+0	1.9E+0	3.4E+0	1.0E+0	1.3E+1	7.4E+0	3.5E+0	3.4E+0

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J SULFUR	*- - - EMISSIONS - - - - NG/J* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	351.3	2.3E-1	4.4E+0	0.0	0.0	4.7E+0	2.4E+0	3.3E-2	7.0E-2
E 16	8.3	2760	254.6	3.3E-1	3.9E-2	2.0E-1	0.0	5.7E-1	2.3E-1	2.0E-1	2.0E-1
E 17	6.2	2770	281.1	8.2E-1	1.8E-1	1.0E-1	0.0	1.1E+0	2.2E-1	1.1E-1	1.0E-1
F 22	6.0	2980	476.0	2.7E+0	3.2E-2	4.8E+0	0.0	7.5E+0	4.9E+0	4.8E+0	4.8E+0
F 30	6.8	2890	313.5	1.3E+0	3.2E-2	2.7E-1	0.0	1.6E+0	3.3E-1	2.8E-1	2.8E-1
G 15	8.7	3230	230.9	1.5E+0	1.9E-1	2.2E+2	0.0	2.2E+2	2.2E+2	2.2E+2	2.2E+2
G 20	9.2	2320	230.5	9.2E-2	2.9E+0	2.3E+2	0.0	2.3E+2	2.3E+2	2.3E+2	2.3E+2
H 11	9.4	1980	581.8	1.1E+1	1.5E-2	2.2E+0	0.0	1.3E+1	2.6E+0	2.3E+0	2.4E+0
I 09	5.9	2700	606.9	7.1E-1	1.0E+0	1.5E+3	0.0	1.5E+3	1.5E+3	1.5E+3	1.5E+3
I 18	7.8	1670	408.3	6.5E-1	2.3E+0	1.8E+2	7.4E-3	1.8E+2	1.8E+2	1.8E+2	1.8E+2
J 15	7.9	1550	317.1	2.8E-1	9.2E-1	1.3E+2	5.9E-1	1.3E+2	1.3E+2	1.3E+2	1.3E+2
J 16	8.9	2570	668.0	1.5E-2	6.5E-1	2.4E+2	6.6E-1	2.4E+2	2.4E+2	2.4E+2	2.4E+2
K 18	9.8	1280	453.5	6.1E-1	0.0	4.2E+1	1.4E+1	5.7E+1	5.6E+1	5.6E+1	5.6E+1
AVERAGES				1.1E+0	5.7E-1	7.6E+1	0.0	7.8E+1	7.6E+1	7.6E+1	7.6E+1
SPREADER,NO REINJ FROM D.C.				1.9E+0	1.3E+0	2.9E+2	2.2E+0	3.0E+2	3.0E+2	2.9E+2	2.9E+2
MASS FIRED OVERFEED				1.1E+1	4.4E+0	1.5E+3	1.4E+1	1.5E+3	1.5E+3	1.5E+3	1.5E+3
HIGH				1.5E-2	1.5E-2	1.0E-1	7.4E-3	5.7E-1	2.2E-1	3.3E-2	7.0E-2
LOW											

CORRELATIONS WITH -					
FLUE GAS OXYGEN, PERCENT	0.12	0.40	-0.38	0.36	-0.37
TOTAL ASH	-0.06	-0.30	0.16	-0.55	0.15
COAL SULFUR	0.36	-0.17	0.41	0.13	0.41
GRATE HEAT RELEASE	0.08	-0.50	-0.19	-0.32	-0.20
HYDROCARBONS	0.99	-0.25	-0.17	-0.11	-0.17
BOILER EFFICIENCY	-0.36	-0.07	-0.43	0.08	-0.43
CARBON MONOXIDE	0.51	-0.33	-0.28	-0.17	-0.28

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

CHLORINE

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J CHLORINE	*- - - EMISSIONS - - - - NG/J* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	35.7	2.5E-2	1.3E-3	8.6E-3	2.0E-1	2.4E-1	2.2E-1	2.1E-1	2.1E-1
B 31	6.0	2670	22.9	1.4E-2	1.4E-3	1.5E-2	2.1E-1	2.4E-1	2.3E-1	2.3E-1	2.3E-1
B 33	6.1	2130	47.2	6.5E-2	1.2E-3	2.3E-2	2.2E-1	3.1E-1	2.5E-1	2.5E-1	2.5E-1
C 44	8.9	4380	5.1	6.8E-2	6.8E-3	9.3E-4	0.0	7.5E-2	1.2E-2	1.5E-3	1.0E-3
C 45	8.3	4360	5.1	2.4E-1	2.8E-3	8.9E-4	0.0	2.4E-1	2.4E-2	2.6E-3	1.3E-3
C 46	9.0	3230	23.4	2.2E-1	4.5E-3	7.0E-4	0.0	2.2E-1	2.3E-2	2.2E-3	1.0E-3
AVERAGE				1.0E-1	3.0E-3	8.2E-3	1.1E-1	2.2E-1	1.3E-1	1.2E-1	1.1E-1
HIGH				2.4E-1	6.8E-3	2.3E-2	2.2E-1	3.1E-1	2.5E-1	2.5E-1	2.5E-1
LOW				1.4E-2	1.2E-3	7.0E-4	2.0E-1	7.5E-2	1.2E-2	1.5E-3	1.0E-3

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J CHLORINE	*- - - EMISSIONS - - - - NG/J* 18.5 µM 45.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	19.2	7.7E-4	2.7E-2	0.0	0.0	2.7E-2	1.5E-2	1.9E-4	4.1E-4
E 16	8.3	2760	24.1	7.7E-4	9.2E-5	4.0E-1	0.0	4.0E-1	4.0E-1	4.0E-1	4.0E-1
E 17	6.2	2770	27.4	6.4E-4	6.3E-5	1.0E-4	0.0	8.0E-4	1.5E-4	1.0E-4	1.0E-4
F 22	6.0	2980	47.3	2.4E-3	8.5E-5	6.3E-3	0.0	8.9E-3	6.5E-3	6.4E-3	6.3E-3
F 30	6.8	2890	53.8	1.8E-3	2.1E-4	8.1E-2	0.0	8.3E-2	8.1E-2	8.1E-2	8.1E-2
G 15	8.7	3230	23.8	4.4E-3	2.6E-3	1.4E-3	0.0	8.4E-3	2.9E-3	1.4E-3	1.4E-3
G 20	9.2	2320	16.7	6.2E-3	1.2E-3	3.9E-3	0.0	1.1E-2	4.7E-3	3.9E-3	3.9E-3
H 11	9.4	1980	18.0	1.1E-3	2.0E-5	1.1E-2	0.0	1.2E-2	1.1E-2	1.1E-2	1.1E-2
I 09	5.9	2700	129.1	2.4E-3	1.3E-3	2.1E-7	0.0	3.7E-3	8.2E-4	2.6E-5	5.6E-5
I 18	7.8	1670	39.9	3.3E-6	5.8E-3	8.3E-3	3.5E-5	1.4E-2	1.2E-2	8.4E-3	8.5E-3
J 15	7.9	1550	40.0	1.4E-4	3.1E-4	4.7E-3	0.0	5.1E-3	5.1E-3	4.7E-3	4.7E-3
J 16	8.9	2570	62.8	7.6E-5	1.9E-4	1.1E-2	0.0	1.1E-2	1.1E-2	1.1E-2	1.1E-2
K 18	9.8	1280	22.8	6.1E-3	0.0	2.0E-2	1.1E-1	1.3E-1	1.3E-1	1.3E-1	1.3E-1
AVERAGES											
SPREADER,NO REINJ FROM D.C.				2.7E-3	7.0E-4	8.1E-2	0.0	8.5E-2	8.2E-2	8.1E-2	8.1E-2
MASS FIRED OVERFEED				1.5E-3	4.9E-3	7.7E-3	1.5E-2	2.9E-2	2.6E-2	2.3E-2	2.3E-2
HIGH				6.2E-3	2.7E-2	4.0E-1	1.1E-1	4.0E-1	4.0E-1	4.0E-1	4.0E-1
LOW				3.3E-6	2.0E-5	2.1E-7	3.5E-5	8.0E-4	1.5E-4	2.6E-5	5.6E-5

CORRELATIONS WITH -					
FLUE GAS OXYGEN, PERCENT	0.25	0.42	0.01	0.35	0.14
TOTAL ASH	0.00	-0.18	0.21	-0.54	0.06
COAL CHLORINE	-0.17	-0.19	-0.15	-0.17	-0.21
GRATE HEAT RELEASE	0.23	-0.52	0.15	-0.30	0.04
HYDROCARBONS	-0.13	-0.14	-0.09	-0.10	-0.13
BOILER EFFICIENCY	-0.40	0.11	0.15	0.05	0.16
CARBON MONOXIDE	-0.05	-0.15	-0.06	-0.16	-0.11

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15918-564

POTASSIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J POTASSIUM	*- - - EMISSIONS - - - - NG/J* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	48.4	1.1E+0	4.6E-1	1.7E-2	2.5E-1	1.8E+0	7.1E-1	2.8E-1	2.7E-1
B 31	6.0	2670	51.0	3.5E+0	3.3E-1	1.8E-2	1.1E+0	4.9E+0	1.6E+0	1.1E+0	1.1E+0
B 33	6.1	2130	21.8	1.6E+0	3.9E-1	2.9E-2	1.1E+0	3.2E+0	1.6E+0	1.2E+0	1.1E+0
C 44	8.9	4380	20.0	2.0E+1	8.7E-1	7.0E-3	0.0	2.1E+1	2.4E+0	1.6E-1	3.9E-2
C 45	8.3	4360	21.7	3.0E+1	5.5E-1	1.1E-2	0.0	3.0E+1	3.0E+0	2.2E-1	5.7E-2
C 46	9.0	3230	44.3	5.4E+0	1.0E+0	2.3E-2	0.0	6.4E+0	1.2E+0	6.8E-2	3.3E-2
AVERAGE				1.0E+1	6.0E-1	1.8E-2	4.0E-1	1.1E+1	1.8E+0	5.0E-1	4.4E-1
HIGH				3.0E+1	1.0E+0	2.9E-2	1.1E+0	3.1E+1	3.0E+0	1.2E+0	1.1E+0
LOW				1.1E+0	3.3E-1	7.0E-3	2.5E-1	1.8E+0	7.1E-1	6.8E-2	3.3E-2

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J POTASSIUM	*- - - EMISSIONS - - - - NG/J* 10.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	27.6	4.6E+0	3.8E+0	0.0	0.0	8.4E+0	2.2E+0	5.9E-2	1.3E-1
E 16	8.3	2760	47.4	2.2E+0	1.3E-1	1.8E-4	0.0	2.3E+0	1.4E-1	1.6E-2	9.5E-3
E 17	6.2	2770	43.2	3.6E+0	9.0E-1	1.0E-4	0.0	4.5E+0	6.1E-1	3.2E-2	1.8E-2
F 22	6.0	2980	39.3	1.2E+0	2.1E+0	6.3E-3	0.0	3.3E+0	1.2E+0	3.0E-2	2.0E-2
F 30	6.8	2890	51.5	8.9E+0	4.2E-1	1.6E-3	0.0	9.3E+0	5.2E-1	6.7E-2	3.9E-2
G 15	8.7	3230	66.2	7.4E+0	3.2E+0	2.0E-2	0.0	1.1E+1	2.0E+0	9.5E-2	6.3E-2
G 23	9.2	2320	29.5	2.1E+1	2.9E+0	3.9E-2	0.0	2.4E+1	2.3E+0	2.0E-1	1.3E-1
H 11	9.4	1980	28.6	5.3E+0	4.9E-1	8.3E-3	0.0	5.8E+0	4.5E-1	4.9E-2	9.5E-2
I 09	5.9	2700	43.3	7.1E+0	5.0E+0	6.4E-1	0.0	1.3E+1	3.6E+0	7.2E-1	8.2E-1
I 18	7.8	1670	20.6	3.3E+0	3.5E+0	2.8E-2	3.5E-5	6.8E+0	2.0E+0	7.5E-2	1.3E-1
J 15	7.9	1550	22.8	2.1E+0	6.1E+0	7.0E-3	8.8E-2	8.3E+0	8.3E+0	1.5E-1	2.2E-1
J 16	8.9	2570	40.7	1.1E+0	6.5E+0	2.4E-2	0.0	7.7E+0	7.7E+0	7.7E-2	1.4E-1
K 18	9.8	1280	18.5	9.1E-1	0.0	5.6E-2	2.8E-2	1.0E+0	1.1E-1	9.0E-2	1.0E-1
AVERAGES											
SPREADER, NO REINJ FROM D.C.				7.3E+0	1.6E+0	1.1E-2	0.0	8.9E+0	1.1E+0	7.4E-2	4.7E-2
MASS FIRED OVERFEED				3.5E+0	3.6E+0	1.1E-1	1.7E-2	7.2E+0	3.5E+0	1.7E-1	2.3E-1
HIGH				2.1E+1	6.5E+0	6.4E-1	8.8E-2	2.4E+1	8.3E+0	7.2E-1	8.2E-1
LOW				9.1E-1	1.3E-1	1.0E-4	3.5E-5	1.0E+0	1.1E-1	1.6E-2	9.5E-3
CORRELATIONS WITH -											
FLUE GAS OXYGEN, PERCENT				0.10	-0.01	-0.40	0.07	0.08			
TOTAL ASH				0.19	-0.07	0.12	-0.56	0.15			
ASH POTASSIUM				0.12	-0.09	0.10	-0.42	0.08			
GRATE HEAT RELEASE				0.32	-0.40	-0.21	-0.29	0.13			
HYDROCARBONS				-0.02	-0.32	-0.12	-0.13	-0.15			
BOILER EFFICIENCY				-0.46	0.08	-0.39	0.47	-0.40			
CARBON MONOXIDE				-0.06	-0.37	-0.19	-0.21	-0.21			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15918-564

CALCIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J CALCIUM	EMISSIONS NG/J* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP MULTI-CLONE	STACK GAS CLEAN-UP E.S.P.	STACK GAS CLEAN-UP BAGHOUSE
B 30	6.0	2710	27.1	1.1E+0	4.8E-1	2.0E-1	2.0E+0	3.8E+0	2.7E+0	2.2E+0	2.2E+0
B 31	6.0	2670	36.3	3.5E+0	5.7E-1	2.9E-1	5.3E-1	4.9E+0	1.6E+0	8.5E-1	8.3E-1
B 33	6.1	2130	30.5	3.3E+0	1.0E+0	2.9E-1	5.5E-1	5.1E+0	1.9E+0	8.7E-1	8.5E-1
C 44	8.9	4380	511.3	1.0E+3	1.3E+1	1.4E-1	5.9E-1	1.0E+3	1.0E+2	7.9E+0	2.3E+0
C 45	9.3	4360	399.2	8.9E+2	9.8E+0	1.6E-1	2.3E+0	9.1E+2	8.8E+1	8.7E+0	3.8E+0
C 46	9.0	3230	56.6	1.1E+2	4.7E+0	1.4E-1	5.9E-1	1.1E+2	1.4E+1	1.5E+0	9.0E-1
AVERAGE				3.4E+2	5.0E+0	2.0E-1	1.1E+0	3.4E+2	3.5E+1	3.7E+0	1.8E+0
HIGH				1.0E+3	1.3E+1	2.9E-1	2.3E+0	1.0E+3	1.0E+2	8.7E+0	3.8E+0
LOW				1.1E+0	4.8E-1	1.4E-1	5.3E-1	3.8E+0	1.6E+0	8.5E-1	8.3E-1

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J CALCIUM	EMISSIONS NG/J* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP MULTI-CLONE	STACK GAS CLEAN-UP E.S.P.	STACK GAS CLEAN-UP BAGHOUSE
D 22	10.2	2070	27.8	9.2E-1	3.1E+0	0.0	0.0	4.0E+0	1.7E+0	2.8E-2	6.0E-2
E 16	8.3	2760	40.8	2.2E+0	6.5E-1	5.9E-2	0.0	2.9E+0	4.9E-1	7.9E-2	7.1E-2
E 17	6.2	2770	32.4	9.1E-1	8.1E-1	1.4E-2	0.0	1.7E+0	4.9E-1	2.6E-2	2.1E-2
F 22	6.0	2980	53.6	2.7E+0	2.1E-1	1.3E-1	0.0	3.1E+0	3.3E-1	1.5E-1	1.4E-1
F 30	6.8	2890	29.9	4.5E+0	2.1E-1	2.7E-2	0.0	4.7E+0	2.9E-1	6.0E-2	4.6E-2
G 15	8.7	3230	27.4	2.2E+0	3.2E+0	2.0E-2	0.0	5.5E+0	1.9E+0	5.9E-2	4.2E-2
G 20	9.2	2320	21.9	3.1E+0	2.9E-1	3.8E-1	0.0	3.8E+0	6.4E-1	4.0E-1	3.9E-1
H 11	9.4	1980	27.1	1.1E+0	1.2E-1	2.2E-1	0.0	1.4E+0	3.2E-1	2.3E-1	2.4E-1
I 19	5.9	2700	46.2	2.4E+0	3.4E-1	3.2E+0	0.0	5.9E+0	3.4E+0	3.2E+0	3.2E+0
I 18	7.8	1670	35.8	3.3E+0	1.7E-1	1.4E+0	3.5E-1	5.2E+0	1.9E+0	1.8E+0	1.8E+0
J 15	7.9	1550	25.2	4.2E-1	9.2E-2	1.9E-1	0.0	7.0E-1	7.0E-1	1.9E-1	1.9E-1
J 16	8.9	2570	38.8	4.6E-1	1.0E-1	2.6E-1	3.3E-1	1.2E+0	1.2E+0	6.0E-1	6.0E-1
K 18	9.8	1280	51.0	1.8E+0	0.0	2.5E-1	1.4E-1	2.2E+0	4.5E-1	4.1E-1	4.2E-1
AVERAGES											
SPREADER, NO REINJ FROM D.C.				2.6E+0	9.1E-1	1.8E-1	0.0	3.6E+0	6.9E-1	1.3E-1	1.2E-1
MASS FIRED OVERFEED				1.5E+0	5.6E-1	7.8E-1	1.2E-1	2.9E+0	1.4E+0	9.2E-1	9.3E-1
HIGH				4.5E+0	3.2E+0	3.2E+0	3.5E-1	5.9E+0	3.4E+0	3.2E+0	3.2E+0
LOW				4.2E-1	9.2E-2	1.4E-2	1.4E-1	7.0E-1	2.9E-1	2.6E-2	2.1E-2

CORRELATIONS WITH -					
FLUE GAS OXYGEN, PERCENT	-0.34	0.32	-0.40	0.18	-0.22
TOTAL ASH	0.29	0.32	-0.03	-0.35	0.36
ASH CALCIUM	0.11	-0.34	0.31	0.23	0.04
GRATE HEAT RELEASE	0.55	-0.03	-0.28	-0.39	0.19
HYDROCARBONS	-0.18	-0.19	-0.11	-0.18	-0.31
BOILER EFFICIENCY	-0.42	-0.08	-0.50	-0.09	-0.61
CARBON MONOXIDE	0.39	-0.22	-0.23	-0.28	-0.01

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15918-564

SCANDIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - - - - NG/J* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	7.0E-2	2.3E-2	1.1E-4	5.1E-4	9.3E-2	2.4E-2	1.3E-3	7.6E-4
B 31	6.0	2670	7.1E-2	2.0E-2	1.2E-4	5.3E-4	9.1E-2	2.2E-2	1.3E-3	7.8E-4
B 33	6.1	2130	6.5E-2	3.3E-2	1.2E-4	5.5E-4	1.0E-1	3.1E-2	1.4E-3	8.2E-4
C 44	8.9	4380	1.4E-1	2.0E-3	4.7E-5	2.9E-4	1.4E-1	1.4E-2	1.3E-3	5.5E-4
C 45	8.3	4360	2.4E-1	1.6E-3	4.5E-5	2.8E-4	2.4E-1	2.2E-2	2.0E-3	6.9E-4
C 46	9.0	3230	1.1E-1	7.0E-3	2.3E-5	3.0E-4	1.2E-1	1.5E-2	1.1E-3	4.9E-4
AVERAGE			1.1E-1	1.4E-2	7.8E-5	4.1E-4	1.3E-1	2.1E-2	1.4E-3	6.8E-4
HIGH			2.4E-1	3.3E-2	1.2E-4	5.5E-4	2.4E-1	3.1E-2	2.0E-3	8.2E-4
LOW			6.5E-2	1.6E-3	2.3E-5	2.8E-4	9.1E-2	1.4E-2	1.1E-3	4.9E-4

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - - - - NG/J* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	5.4E-3	1.9E-3	0.0	0.0	7.3E-3	1.2E-3	5.1E-5	1.1E-4
E 16	8.3	2760	2.2E-2	7.8E-3	1.9E-4	0.0	3.0E-2	5.1E-3	3.1E-4	2.2E-4
E 17	6.2	2770	9.1E-3	1.8E-2	6.0E-5	0.0	2.7E-2	1.0E-2	2.5E-4	1.7E-4
F 22	6.8	2980	6.1E-2	2.1E-3	2.5E-4	0.0	6.3E-2	3.4E-3	6.9E-4	5.0E-4
F 30	6.8	2890	4.5E-2	2.1E-3	2.7E-4	0.0	4.7E-2	2.9E-3	6.8E-4	4.6E-4
G 15	8.7	3230	1.5E-2	2.6E-3	3.4E-4	0.0	1.8E-2	2.2E-3	4.6E-4	4.1E-4
G 20	9.2	2320	4.1E-2	1.2E-3	7.8E-4	0.0	4.3E-2	2.7E-3	1.1E-3	9.5E-4
H 11	9.4	1980	1.1E-2	1.0E-3	5.5E-4	0.0	1.2E-2	1.4E-3	6.3E-4	7.3E-4
I 09	5.9	2700	1.4E-2	1.3E-3	1.3E-2	0.0	2.8E-2	1.4E-2	1.3E-2	1.3E-2
I 18	7.8	1670	2.0E-2	5.8E-4	2.8E-3	2.1E-3	2.5E-2	5.8E-3	5.0E-3	5.2E-3
J 15	7.9	1550	2.8E-3	1.2E-3	2.3E-3	1.8E-3	8.1E-3	8.1E-3	4.1E-3	4.2E-3
J 16	8.9	2570	1.5E-3	3.2E-3	5.3E-3	3.3E-3	1.3E-2	1.3E-2	8.6E-3	8.6E-3
K 18	9.8	1280	1.2E-2	0.0	2.8E-3	1.4E-2	2.9E-2	1.7E-2	1.7E-2	1.7E-2
AVERAGES			3.2E-2	5.7E-3	3.0E-4	0.0	3.8E-2	4.4E-3	5.6E-4	4.5E-4
SPREADER,NO REINJ FROM D.C.			9.5E-3	1.3E-3	3.8E-3	3.0E-3	1.8E-2	8.7E-3	6.9E-3	7.0E-3
MASS FIRED OVERFEED			6.1E-2	1.8E-2	1.3E-2	1.4E-2	6.3E-2	1.7E-2	1.7E-2	1.7E-2
HIGH			1.5E-3	5.8E-4	6.0E-5	1.8E-3	7.3E-3	1.2E-3	5.1E-5	1.1E-4
LOW										
CORRELATIONS WITH -										
FLUE GAS OXYGEN, PERCENT			-0.41	-0.38	-0.31	0.38	-0.54			
TOTAL ASH			0.41	0.39	-0.04	-0.62	0.41			
GRATE HEAT RELEASE			0.71	0.32	-0.38	-0.41	0.70			
HYDROCARBONS			-0.04	-0.16	-0.17	-0.15	-0.16			
BOILER EFFICIENCY			-0.14	0.40	-0.27	0.11	-0.07			
CARBON MONOXIDE			0.71	-0.18	-0.30	-0.24	0.60			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

TITANIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J TITANIUM	*- - - EMISSIONS - - - - NG/J* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
								2.5E-1			
A 34	5.9	3210	13.5					3.7E-4			
A 35	6.0	3140	13.2								
B 30	6.0	2710	28.6	7.0E+0	2.1E+0	5.7E-3	5.1E-3	9.1E+0	2.2E+0	7.5E-2	2.5E-2
B 31	6.0	2670	24.7	1.1E+1	8.2E-1	8.8E-3	5.3E-3	1.1E+1	1.6E+0	9.4E-2	3.1E-2
B 33	6.1	2130	21.1	9.8E+0	1.5E+0	1.7E-2	5.5E-3	1.1E+1	2.0E+0	1.0E-1	4.0E-2
C 44	8.9	4380	23.1	4.7E+1	1.8E+0	1.2E-2	1.2E-2	4.9E+1	5.6E+0	3.7E-1	1.0E-1
C 45	8.3	4360	25.9	4.2E+1	1.6E+0	6.7E-3	5.1E-2	4.3E+1	4.9E+0	3.6E-1	1.2E-1
C 46	9.8	3230	20.8	3.8E+1	1.3E+0	7.0E-3	1.8E-2	3.9E+1	4.3E+0	3.0E-1	8.3E-2
AVERAGE				1.9E+1	1.1E+0	7.2E-3	1.2E-2	2.0E+1	2.6E+0	1.9E-1	8.1E-2
HIGH				4.7E+1	2.1E+0	1.7E-2	5.1E-2	4.9E+1	5.6E+0	3.7E-1	2.5E-1
LOW				7.0E+0	8.2E-1	5.7E-3	5.1E-3	3.7E-4	3.7E-4	3.7E-4	3.7E-4

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J TITANIUM	*- - - EMISSIONS - - - - NG/J* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	19.2	4.6E+0	1.0E+0	0.0	0.0	5.5E+0	6.7E-1	3.9E-2	8.3E-2
E 16	8.3	2760	26.9	1.1E+1	2.6E+0	4.0E-3	0.0	1.4E+1	1.8E+0	1.0E-1	9.8E-2
E 17	6.2	2770	61.5	3.6E+0	9.0E-1	6.0E-4	0.0	4.5E+0	6.1E-1	3.2E-2	1.9E-2
F 22	6.0	2980	21.9	9.1E+0	3.2E-1	1.3E-2	0.0	9.4E+0	4.8E-1	7.9E-2	5.0E-2
F 30	6.8	2690	25.3	2.0E+1	3.2E-1	2.7E-3	0.0	2.0E+1	8.2E-1	1.5E-1	8.4E-2
G 15	8.7	3230	30.6	1.5E+1	3.2E+0	6.8E-3	0.0	1.8E+1	2.3E+0	1.3E-1	7.9E-2
G 20	9.2	2320	26.2	3.1E+1	1.8E+0	3.8E-2	0.0	3.3E+1	2.0E+0	2.7E-1	1.7E-1
H 11	9.4	1980	13.3	4.8E+0	2.2E-1	2.2E-2	0.0	5.0E+0	3.0E-1	5.7E-2	1.0E-1
I 09	5.9	2700	19.8	7.1E-1	6.7E-1	6.4E-1	0.0	2.0E+0	1.0E+0	6.5E-1	6.6E-1
I 18	7.8	1670	15.9	9.8E+0	4.6E-1	8.3E-2	7.0E-5	1.0E+1	6.5E-1	1.6E-1	2.4E-1
J 15	7.9	1550	14.0	1.4E+0	6.1E-1	7.0E-2	0.0	2.1E+0	2.1E+0	8.4E-2	1.0E-1
J 16	8.9	2570	19.9	7.6E-1	3.2E-1	1.3E-1	0.0	1.2E+0	1.2E+0	1.4E-1	1.5E-1
K 18	9.8	1280	8.7	1.2E+0	0.0	5.6E-2	3.5E-2	1.3E+0	1.3E-1	1.0E-1	1.1E-1
AVERAGES											
SPREADER,NO REINJ FROM D.C.				1.5E+1	1.5E+0	1.1E-2	0.0	1.6E+1	1.3E+0	1.3E-1	7.6E-2
MASS FIRED OVERFEED				3.3E+0	4.6E-1	1.4E-1	5.0E-3	3.9E+0	8.7E-1	1.7E-1	2.0E-1
HIGH				3.1E+1	3.2E+0	6.4E-1	3.5E-2	3.3E+1	2.3E+0	6.5E-1	6.6E-1
LOW				7.1E-1	2.2E-1	6.0E-4	7.0E-5	1.2E+0	1.3E-1	3.2E-2	1.9E-2
CORRELATIONS WITH -											
FLUE GAS OXYGEN, PERCENT				0.05	0.15	-0.39	0.35	0.06			
TOTAL ASH				0.32	0.49	0.06	-0.54	0.36			
ASH TITANIUM				0.16	0.35	-0.18	-0.34	0.19			
GRATE HEAT RELEASE				0.60	0.34	-0.29	-0.30	0.60			
HYDROCARBONS				-0.11	-0.26	-0.13	-0.10	-0.14			
BOILER EFFICIENCY				-0.34	-0.26	-0.33	0.05	-0.36			
CARBON MONOXIDE				0.18	-0.37	-0.24	-0.16	0.12			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

VANADIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS NG/J: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
							4.9E-3			
							2.8E-3			
A 34	5.9	3210	1.1E-1	8.0E-2	5.7E-3	5.1E-4	1.9E-1	7.6E-2	7.6E-3	6.5E-3
A 35	6.0	3140	7.1E-1	8.6E-2	8.8E-3	5.3E-4	8.0E-1	1.4E-1	1.5E-2	1.1E-2
B 30	6.0	2710	1.3E-1	8.0E-2	1.2E-2	5.5E-4	2.2E-1	8.4E-2	1.4E-2	1.2E-2
B 31	6.0	2670	1.4E+0	3.0E-2	1.9E-3	0.0	1.4E+0	1.4E-1	1.2E-2	3.9E-3
B 33	6.1	2130	1.2E+0	3.7E-2	4.5E-4	0.0	1.2E+0	1.3E-1	9.0E-3	2.3E-3
C 44	6.9	4380	1.1E+0	5.2E-2	7.0E-3	0.0	1.1E+0	1.4E-1	1.5E-2	8.7E-3
C 45	8.3	4360								
C 46	9.0	3230								
AVERAGE			5.7E-1	4.6E-2	4.4E-3	2.0E-4	6.2E-1	9.0E-2	1.0E-2	6.5E-3
HIGH			1.4E+0	8.6E-2	1.2E-2	5.5E-4	1.4E+0	1.4E-1	1.5E-2	1.2E-2
LOW			1.1E-1	3.0E-2	4.5E-4	5.1E-4	2.8E-3	2.8E-3	2.6E-3	2.3E-3

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS NG/J: 18.5 µM 45.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	13.2	2070	7.7E-2	1.0E-1	0.0	0.0	1.8E-1	5.9E-2	1.3E-3	2.7E-3
E 16	6.3	2760	3.3E-1	7.8E-2	2.0E-3	0.0	4.1E-1	5.6E-2	4.8E-3	3.6E-3
E 17	6.2	2770	9.1E-2	5.4E-2	1.6E-4	0.0	1.5E-1	3.3E-2	1.2E-3	7.4E-4
F 22	6.0	2980	3.0E-1	3.2E-2	6.3E-3	0.0	3.4E-1	3.4E-2	8.7E-3	7.7E-3
F 30	6.8	2890	6.7E-1	3.2E-2	1.9E-3	0.0	7.0E-1	4.1E-2	6.8E-3	4.7E-3
G 15	8.7	3230	2.2E-1	5.2E-2	3.4E-3	0.0	2.8E-1	3.9E-2	5.3E-3	4.5E-3
G 20	9.2	2320	5.1E-1	4.7E-2	1.1E-2	0.0	5.7E-1	5.4E-2	1.5E-2	1.4E-2
H 11	9.4	1980	3.2E-1	2.4E-2	2.5E-3	0.0	3.4E-1	2.6E-2	4.9E-3	7.6E-3
I 09	5.9	2730	1.9E-1	1.0E-1	6.4E-2	0.0	3.5E-1	1.3E-1	6.6E-2	6.8E-2
I 18	7.8	1670	1.0E-1	2.3E-2	2.8E-2	3.5E-5	1.5E-1	4.4E-2	2.9E-2	3.0E-2
J 15	7.9	1550	2.8E-2	6.1E-2	2.3E-2	2.4E-3	1.2E-1	1.2E-1	2.6E-2	2.7E-2
J 16	8.9	2570	1.5E-2	6.5E-2	1.3E-2	0.0	9.3E-2	9.3E-2	1.4E-2	1.4E-2
K 18	9.8	1280	3.0E-2	0.0	8.4E-4	1.1E-3	3.2E-2	2.9E-3	2.1E-3	2.4E-3
AVERAGES										
SPREADER,NO REINJ FROM D.C.			3.5E-1	4.9E-2	4.2E-3	0.0	4.1E-1	4.3E-2	7.0E-3	5.8E-3
MASS FIRED OVERFEED			1.1E-1	5.4E-2	1.9E-2	4.9E-4	1.8E-1	6.6E-2	2.0E-2	2.2E-2
HIGH			6.7E-1	1.0E-1	6.4E-2	2.4E-3	7.0E-1	1.3E-1	6.6E-2	6.8E-2
LOW			1.5E-2	2.3E-2	1.6E-4	3.5E-5	3.2E-2	2.9E-3	1.2E-3	7.4E-4
CORRELATIONS WITH -										
FLUE GAS OXYGEN, PERCENT			-0.19	-0.08	-0.43	0.11	-0.25			
TOTAL ASH			0.45	0.33	-0.06	-0.62	0.51			
GRATE HEAT RELEASE			0.68	-0.28	-0.28	-0.32	0.62			
HYDROCARBONS			0.19	-0.31	-0.16	-0.14	0.13			
BOILER EFFICIENCY			-0.27	0.17	-0.34	0.46	-0.28			
CARBON MONOXIDE			0.55	-0.36	-0.26	-0.22	0.48			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

CHROMIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS NG/J: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
							4.6E-2			
A 34	5.9	3210					6.6E-3			
A 35	6.0	3140	3.5E-2	4.3E-2	1.4E+0	2.5E-4	1.5E+0	1.5E+0	1.4E+0	1.4E+0
B 30	6.8	2710	7.1E-2	3.6E-2	1.5E+0	2.6E-2	1.6E+0	1.5E+0	1.5E+0	1.5E+0
B 31	6.0	2670	1.0E-1	3.7E-2	2.9E+0	2.8E-2	3.1E+0	3.0E+0	2.9E+0	2.9E+0
B 33	6.1	2130	6.8E-1	4.8E-2	4.7E-1	2.6E-1	1.5E+0	8.3E-1	7.4E-1	7.3E-1
C 44	8.9	4360	6.0E-1	4.8E-2	2.2E-1	2.0E-1	1.1E+0	5.1E-1	4.3E-1	4.2E-1
C 45	8.3	4360	5.4E-1	5.6E-2	1.6E+0	5.6E-1	2.8E+0	2.3E+0	2.2E+0	2.2E+0
C 46	9.0	3230								
AVERAGE			2.5E-1	3.4E-2	1.0E+0	1.3E-1	1.4E+0	1.2E+0	1.2E+0	1.2E+0
HIGH			6.8E-1	5.6E-2	2.9E+0	5.6E-1	3.1E+0	3.0E+0	2.9E+0	2.9E+0
LOW			3.5E-2	3.6E-2	2.2E-1	2.5E-4	6.6E-3	6.6E-3	6.6E-3	6.6E-3

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS NG/J: 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	7.7E-1	2.5E-1	0.0	0.0	1.0E+0	1.6E-1	7.1E-3	1.5E-2
E 16	8.3	2760	6.6E-2	5.2E-1	2.0E+0	0.0	2.6E+0	2.3E+0	2.0E+0	2.0E+0
E 17	6.2	2770	2.7E-3	9.0E-2	7.9E-2	0.0	1.7E-1	1.3E-1	8.0E-2	8.0E-2
F 22	6.0	2980	9.1E-2	3.2E-2	3.2E+0	0.0	3.3E+0	3.2E+0	3.2E+0	3.2E+0
F 30	6.8	2890	1.3E-1	1.1E-1	8.1E-1	0.0	1.1E+0	8.8E-1	8.1E-1	8.1E-1
G 15	8.7	3230	1.5E-1	9.2E-2	3.4E+0	0.0	3.6E+0	3.4E+0	3.4E+0	3.4E+0
G 20	9.2	2320	5.1E-1	4.7E-2	2.3E+0	0.0	2.8E+0	2.3E+0	2.3E+0	2.3E+0
H 11	9.4	1960	5.3E-2	1.5E-2	5.5E-1	0.0	6.2E-1	5.6E-1	5.5E-1	5.6E-1
I 09	5.9	2700	1.2E-1	2.7E-2	2.1E+1	0.0	2.1E+1	2.1E+1	2.1E+1	2.1E+1
I 18	7.8	1670	1.0E-1	3.5E-2	5.6E+0	2.8E-1	6.0E+0	5.9E+0	5.8E+0	5.8E+0
J 15	7.9	1550	1.1E-2	2.5E-2	3.5E+0	2.4E-1	3.8E+0	3.8E+0	3.7E+0	3.7E+0
J 16	8.9	2570	1.5E-2	2.6E-2	9.2E+0	2.7E-1	9.5E+0	9.5E+0	9.5E+0	9.5E+0
K 18	9.8	1280	1.8E-2	0.0	2.8E-1	7.8E-1	1.0E+0	1.0E+0	1.0E+0	1.0E+0
AVERAGES										
SPREADER, NO REINJ FROM D.C.			1.6E-1	1.4E-1	2.0E+0	0.0	2.3E+0	2.0E+0	2.0E+0	2.0E+0
MASS FIRED OVERFEED			1.5E-1	5.4E-2	5.8E+0	2.1E-1	6.2E+0	6.0E+0	6.0E+0	6.0E+0
HIGH			7.7E-1	5.2E-1	2.1E+1	7.0E-1	2.1E+1	2.1E+1	2.1E+1	2.1E+1
LOW			2.7E-3	1.5E-2	7.9E-2	2.4E-1	1.7E-1	1.3E-1	7.1E-3	1.5E-2
CORRELATIONS WITH -										
FLUE GAS OXYGEN, PERCENT			0.44	0.13	-0.42	0.35	-0.39			
TOTAL ASH			-0.03	0.24	0.18	-0.72	0.17			
GRATE HEAT RELEASE			-0.24	0.00	-0.21	-0.49	-0.24			
HYDROCARBONS			-0.15	-0.18	-0.19	-0.19	-0.21			
BOILER EFFICIENCY			-0.07	0.26	-0.34	0.14	-0.34			
CARBON MONOXIDE			-0.18	-0.14	-0.23	-0.31	-0.25			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15918-564

MANGANESE

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J MANGANESE	EMISSIONS NG/J 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210	0.0					2.5E-2			
A 35	6.0	3140	0.0					1.3E-2			
B 30	6.0	2710	0.0	3.5E-2	1.9E-2	1.7E-1	5.1E-3	2.3E-1	2.0E-1	1.8E-1	1.8E-1
B 31	6.0	2670	0.0	1.1E-1	7.1E-3	1.8E-1	5.3E-3	2.9E-1	2.8E-1	1.8E-1	1.8E-1
B 33	6.1	2130	0.0	1.6E-1	1.2E-2	2.9E-1	1.7E-2	4.8E-1	3.3E-1	3.1E-1	3.1E-1
C 44	8.9	4380	0.0	6.8E+0	4.3E-1	2.3E-2	0.0	7.2E+0	9.4E-1	7.4E-2	3.4E-2
C 45	8.3	4360	0.0	6.0E+0	2.7E-1	1.3E-2	0.0	6.2E+0	7.4E-1	5.7E-2	2.3E-2
C 46	9.0	3230	0.0	5.4E+0	4.8E-2	7.0E-1	0.0	6.1E+0	1.2E+0	7.4E-1	7.1E-1
AVERAGE				2.3E+0	1.0E-1	1.7E-1	3.4E-3	2.6E+0	4.6E-1	2.0E-1	1.8E-1
HIGH				6.8E+0	4.3E-1	7.0E-1	1.7E-2	7.2E+0	1.2E+0	7.4E-1	7.1E-1
LOW				3.5E-2	7.1E-3	1.3E-2	5.1E-3	1.3E-2	1.3E-2	1.3E-2	1.3E-2

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J MANGANESE	EMISSIONS NG/J 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	0.1	2.3E-1	3.0E-2	0.0	0.0	2.6E-1	2.4E-2	1.8E-3	3.9E-3
E 16	8.3	2760	0.2	1.1E-2	3.9E-3	5.9E-2	0.0	7.4E-2	6.2E-2	5.9E-2	5.9E-2
E 17	6.2	2770	0.2	2.7E-2	9.0E-3	7.9E-3	0.0	4.4E-2	1.4E-2	8.2E-3	8.1E-3
F 22	6.0	2980	0.4	3.0E-2	6.4E-3	1.6E-1	0.0	2.0E-1	1.6E-1	1.6E-1	1.6E-1
F 33	6.8	2890	0.2	6.7E-2	6.4E-3	2.7E-2	0.0	1.0E-1	3.3E-2	2.8E-2	2.7E-2
G 15	8.7	3230	0.5	1.5E-1	1.9E-2	2.4E-1	0.0	4.1E-1	2.5E-1	2.4E-1	2.4E-1
G 20	3.2	2320	0.2	9.2E-2	1.8E-2	2.3E-1	0.0	3.4E-1	2.4E-1	2.3E-1	2.3E-1
H 11	9.4	1980	1.7	3.2E-1	7.3E-3	5.5E-2	0.0	3.8E-1	7.0E-2	5.8E-2	6.0E-2
I 09	5.9	2700	1.0	1.2E-1	2.7E-2	2.1E+0	0.0	2.3E+0	2.1E+0	2.1E+0	2.1E+0
I 18	7.8	1670	0.2	6.5E-2	2.3E-2	2.8E+0	3.2E-4	2.9E+0	2.8E+0	2.8E+0	2.8E+0
J 15	7.9	1550	0.2	7.0E-3	9.2E-3	4.7E-1	0.0	4.8E-1	4.8E-1	4.7E-1	4.7E-1
J 16	8.9	2570	0.9	6.1E-3	1.6E-2	1.3E+0	1.0E-4	1.3E+0	1.3E+0	1.3E+0	1.3E+0
K 18	9.8	1280	0.0	1.8E-2	0.0	8.4E-2	1.4E-3	1.0E-1	8.6E-2	8.5E-2	8.6E-2
AVERAGES											
SPREADER, NO REINJ FROM D.C.				6.3E-2	1.0E-2	1.2E-1	0.0	1.9E-1	1.3E-1	1.2E-1	1.2E-1
MASS FIRED OVERFEED				1.1E-1	1.6E-2	1.0E+0	2.6E-4	1.1E+0	1.0E+0	1.0E+0	1.0E+0
HIGH				3.2E-1	3.0E-2	2.8E+0	1.4E-3	2.9E+0	2.8E+0	2.8E+0	2.8E+0
LOW				6.1E-3	3.9E-3	7.9E-3	1.0E-4	4.4E-2	1.4E-2	1.8E-3	3.9E-3
CORRELATIONS WITH -											
FLUE GAS OXYGEN, PERCENT				0.39	0.07	-0.26	0.35	-0.22			
TOTAL ASH				-0.04	0.08	-0.17	-0.61	-0.17			
ASH MANGANESE				0.58	0.09	0.19	-0.29	0.25			
GRATE HEAT RELEASE				-0.21	-0.37	-0.34	-0.36	-0.37			
HYDROCARBONS				0.70	-0.24	-0.20	-0.13	-0.13			
BOILER EFFICIENCY				-0.58	-0.36	-0.41	-0.01	-0.46			
CARBON MONOXIDE				0.17	-0.38	-0.31	-0.21	-0.38			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

IRON

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J IRON	*- - - EMISSIONS - - - - NG/J* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210	156.4					3.7E-1			
A 35	6.0	3140	152.9					4.8E-1			
B 30	6.0	2710	120.3	1.4E+1	6.6E+0	2.9E+0	5.1E+0	2.9E+1	1.4E+1	8.1E+0	8.0E+0
B 31	6.0	2670	120.4	1.4E+1	7.4E+0	2.9E+0	2.6E-1	2.5E+1	1.0E+1	3.3E+0	3.2E+0
B 33	6.1	2130	98.4	3.3E+1	1.2E+1	1.4E+1	1.7E+0	6.1E+1	2.8E+1	1.6E+1	1.6E+1
C 44	8.9	4380	137.7	3.4E+2	1.8E+0	1.4E+0	0.0	3.4E+2	3.3E+1	3.8E+0	1.9E+0
C 45	8.3	4360	156.6	3.0E+2	1.6E+0	2.2E+0	0.0	3.0E+2	3.0E+1	4.3E+0	2.7E+0
C 46	9.0	3230	561.7	5.4E+2	4.4E+0	3.5E+0	5.9E-1	5.5E+2	5.5E+1	7.9E+0	4.9E+0
AVERAGE				1.5E+2	4.3E+0	3.4E+0	1.0E+0	1.6E+2	2.1E+1	5.6E+0	4.7E+0
HIGH				5.4E+2	1.2E+1	1.4E+1	5.1E+0	5.5E+2	5.5E+1	1.6E+1	1.6E+1
LOW				1.4E+1	1.6E+0	1.4E+0	2.6E-1	3.7E-1	3.7E-1	3.7E-1	3.7E-1

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J IRON	*- - - EMISSIONS - - - - NG/J* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	146.7	1.1E+1	5.2E+0	0.0	0.0	1.7E+1	3.2E+0	1.2E-1	2.5E-1
E 16	8.3	2760	100.0	7.7E+0	9.2E-1	4.9E+0	0.0	1.4E+1	5.7E+0	5.0E+0	5.0E+0
E 17	6.2	2770	120.4	9.1E+0	6.3E+0	7.9E-1	0.0	1.6E+1	4.6E+0	9.0E-1	8.6E-1
F 22	6.0	2980	337.8	6.1E+1	2.1E+0	1.6E+1	0.0	7.9E+1	1.9E+1	1.6E+1	1.6E+1
F 30	6.8	2890	215.7	2.2E+1	2.1E+0	6.8E+0	0.0	3.1E+1	8.7E+0	6.9E+0	6.9E+0
G 15	6.7	3230	154.4	2.9E+1	5.2E+0	8.5E+0	0.0	4.3E+1	1.2E+1	8.8E+0	8.7E+0
G 20	9.2	2320	73.4	3.1E+1	1.8E+0	5.7E+0	0.0	3.8E+1	7.7E+0	5.9E+0	5.8E+0
H 11	9.4	1980	391.4	1.6E+1	1.5E+0	2.5E+0	0.0	2.0E+1	3.8E+0	2.6E+0	2.8E+0
I 09	5.9	2700	514.4	5.9E+1	5.0E+0	8.5E+1	0.0	1.5E+2	9.0E+1	8.5E+1	8.6E+1
I 18	7.8	1670	220.8	8.2E+1	5.8E+0	3.3E+1	7.0E-3	1.2E+2	3.9E+1	3.4E+1	3.5E+1
J 15	7.9	1550	192.4	3.5E+0	7.7E+0	3.5E+1	1.5E+0	4.8E+1	4.8E+1	3.7E+1	3.7E+1
J 16	8.9	2570	397.0	3.1E+0	6.5E+0	5.3E+1	1.7E+0	6.4E+1	6.4E+1	5.4E+1	5.4E+1
K 18	9.8	1280	189.1	6.1E+0	0.0	1.7E+0	2.1E+0	9.9E+0	4.0E+0	3.8E+0	3.9E+0
AVERAGES											
SPREADER, NO REINJ FROM D.C.				2.7E+1	3.1E+0	7.1E+0	0.0	3.7E+1	9.6E+0	7.3E+0	7.2E+0
MASS FIRED OVERFEED				2.6E+1	4.5E+0	3.0E+1	7.5E-1	6.1E+1	3.6E+1	3.1E+1	3.1E+1
HIGH				8.2E+1	7.7E+0	8.5E+1	2.1E+0	1.5E+2	9.0E+1	8.5E+1	8.6E+1
LOW				3.1E+0	9.2E-1	7.9E-1	7.0E-3	9.9E+0	3.2E+0	1.2E-1	2.5E-1
CORRELATIONS WITH -											
FLUE GAS OXYGEN, PERCENT				-0.47	-0.22	-0.41	0.34	-0.53			
TOTAL ASH				0.13	0.02	0.04	-0.56	0.09			
ASH IRON				0.32	0.11	0.72	0.09	0.63			
GRATE HEAT RELEASE				0.18	-0.24	-0.29	-0.46	-0.09			
HYDROCARBONS				-0.07	-0.33	-0.21	-0.19	-0.19			
BOILER EFFICIENCY				-0.59	0.25	-0.17	0.41	-0.43			
CARBON MONOXIDE				0.23	-0.41	-0.23	-0.30	-0.03			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15918-564

COBALT

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - EMISSIONS - - - - NG/J* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210					4.9E-3			
A 35	6.0	3140					2.3E-3			
B 30	6.0	2710	1.1E-2	2.2E-2	5.7E-2	5.1E-3	1.0E-1	8.0E-2	6.3E-2	6.3E-2
B 31	6.0	2670	3.5E-2	2.2E-2	5.9E-2	2.1E-3	1.2E-1	8.0E-2	6.1E-2	6.1E-2
B 33	6.1	2130	3.3E-2	3.9E-2	1.2E-1	2.2E-3	1.9E-1	1.5E-1	1.2E-1	1.2E-1
C 44	8.9	4380	6.8E-2	5.6E-3	7.0E-3	1.8E-2	1.0E-1	3.5E-2	2.5E-2	2.5E-2
C 45	9.3	4360	6.8E-2	4.2E-3	4.5E-3	0.0	6.8E-2	1.3E-2	4.9E-3	4.6E-3
C 46	9.0	3230	1.6E-1	2.2E-2	7.0E-2	2.4E-2	2.8E-1	1.2E-1	1.0E-1	9.4E-2
AVERAGE			4.6E-2	1.4E-2	3.9E-2	6.3E-3	1.1E-1	6.1E-2	4.7E-2	4.7E-2
HIGH			1.6E-1	3.9E-2	1.2E-1	2.4E-2	2.8E-1	1.5E-1	1.2E-1	1.2E-1
LOW			1.1E-2	4.2E-3	4.5E-3	2.1E-3	2.3E-3	2.3E-3	2.3E-3	2.3E-3

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - EMISSIONS - - - - NG/J* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	13.2	2070	7.7E-3	6.5E-2	0.0	0.0	7.2E-2	3.6E-2	5.1E-4	1.1E-3
E 16	8.3	2760	6.6E-2	7.8E-2	7.9E-2	0.0	2.2E-1	1.2E-1	8.0E-2	8.0E-2
E 17	6.2	2770	2.7E-2	5.4E-2	1.4E-3	0.0	8.3E-2	3.2E-2	2.0E-3	1.7E-3
F 22	6.0	2980	9.1E-2	6.4E-3	1.3E-1	0.0	2.2E-1	1.3E-1	1.3E-1	1.3E-1
F 30	6.8	2890	1.3E-1	1.1E-2	2.7E-2	0.0	1.7E-1	3.7E-2	2.8E-2	2.8E-2
G 15	8.7	3230	6.6E-2	3.2E-2	1.7E-2	0.0	1.2E-1	3.7E-2	1.8E-2	1.7E-2
G 20	9.2	2320	8.2E-2	2.9E-2	1.1E-2	0.0	1.2E-1	3.0E-2	1.2E-2	1.2E-2
H 11	9.4	1980	4.8E-2	2.4E-2	2.2E-2	0.0	9.4E-2	3.7E-2	2.3E-2	2.3E-2
I 09	5.9	2700	1.9E-2	1.0E-2	6.4E-1	0.0	6.7E-1	6.4E-1	6.4E-1	6.4E-1
I 18	7.8	1670	2.6E-2	2.3E-2	2.8E-1	1.8E-2	3.4E-1	3.1E-1	3.0E-1	3.0E-1
J 15	7.9	1550	4.2E-3	2.5E-2	1.4E-1	0.0	1.7E-1	1.7E-1	1.4E-1	1.4E-1
J 16	8.9	2570	1.5E-3	1.6E-2	2.4E-1	1.7E-2	2.7E-1	2.7E-1	2.5E-1	2.5E-1
K 18	9.8	1280	1.2E-2	0.0	5.6E-3	7.0E-4	1.8E-2	6.7E-3	6.4E-3	6.5E-3
AVERAGES										
SPREADER,NO REINJ FROM D.C.			7.8E-2	3.5E-2	4.4E-2	0.0	1.6E-1	6.6E-2	4.5E-2	4.4E-2
MASS FIRED OVERFEED			1.7E-2	2.3E-2	1.9E-1	5.0E-3	2.3E-1	2.1E-1	1.9E-1	1.9E-1
HIGH			1.3E-1	7.8E-2	6.4E-1	1.8E-2	6.7E-1	6.4E-1	6.4E-1	6.4E-1
LOW			1.5E-3	6.4E-3	1.4E-3	7.0E-4	1.8E-2	6.7E-3	5.1E-4	1.1E-3
CORRELATIONS WITH -										
FLUE GAS OXYGEN, PERCENT			-0.30	0.21	-0.48	0.09	-0.56			
TOTAL ASH			0.57	0.18	0.06	-0.20	0.22			
GRATE HEAT RELEASE			0.84	-0.08	-0.27	-0.31	-0.11			
HYDROCARBONS			0.10	-0.11	-0.17	-0.15	-0.18			
BOILER EFFICIENCY			-0.19	0.24	-0.29	-0.10	-0.33			
CARBON MONOXIDE			0.66	-0.36	-0.18	-0.24	-0.09			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

NICKEL

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - - - - NG/J* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210					4.6E-2			
A 35	6.0	3140					1.4E-2			
B 30	6.0	2710	3.5E-2	5.4E-2	5.7E+0	2.5E-1	6.1E+0	6.0E+0	6.0E+0	6.0E+0
B 31	6.0	2670	3.5E-2	3.6E-2	5.9E+0	1.6E-1	6.1E+0	6.0E+0	6.0E+0	6.0E+0
B 33	6.1	2130	3.3E-2	5.2E-2	8.7E+0	1.7E-1	8.9E+0	8.9E+0	8.9E+0	8.9E+0
C 44	8.9	4380	6.8E-1	2.0E-2	9.3E-1	1.2E+0	2.8E+0	2.2E+0	2.1E+0	2.1E+0
C 45	8.3	4360	3.6E-1	2.1E-2	2.0E-1	0.0	5.8E-1	2.5E-1	2.0E-1	2.0E-1
C 46	9.0	3230	8.6E-1	2.6E-2	1.2E+0	2.4E+0	4.4E+0	3.6E+0	3.5E+0	3.5E+0
AVERAGE			2.5E-1	2.6E-2	2.8E+0	5.1E-1	3.6E+0	3.4E+0	3.3E+0	3.3E+0
HIGH			8.6E-1	5.4E-2	8.7E+0	2.4E+0	8.9E+0	8.9E+0	8.9E+0	8.9E+0
LOW			3.3E-2	2.0E-2	2.0E-1	1.6E-1	1.4E-2	1.4E-2	1.4E-2	1.4E-2

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - - - - NG/J* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	2.3E-1	1.3E-1	0.0	0.0	3.6E-1	8.0E-2	2.5E-3	5.4E-3
E 16	8.3	2760	6.6E-2	1.3E-1	2.0E-1	0.0	3.9E-1	2.7E-1	2.0E-1	2.0E-1
E 17	6.2	2770	5.5E-2	9.0E-2	1.4E-1	0.0	2.8E-1	1.9E-1	1.4E-1	1.4E-1
F 22	6.0	2980	9.1E-2	1.1E-2	2.5E+0	0.0	2.6E+0	2.5E+0	2.5E+0	2.5E+0
F 30	6.8	2890	6.7E-2	6.4E-2	8.1E-1	0.0	9.4E-1	8.5E-1	8.1E-1	8.1E-1
G 15	8.7	3230	1.5E-1	5.2E-2	6.8E-1	0.0	8.8E-1	7.1E-1	6.8E-1	6.8E-1
G 20	9.2	2320	2.1E-1	1.8E-1	1.5E+0	0.0	1.9E+0	1.6E+0	1.5E+0	1.5E+0
H 11	9.4	1980	5.3E-2	1.5E-1	1.1E+0	0.0	1.3E+0	1.2E+0	1.1E+0	1.1E+0
I 09	5.9	2700	1.9E-1	6.7E-2	4.2E-1	0.0	6.8E-1	4.7E-1	4.3E-1	4.3E-1
I 18	7.8	1670	6.5E-2	5.8E-2	9.7E+0	2.8E-2	9.9E+0	9.8E+0	9.8E+0	9.8E+0
J 15	7.9	1550	2.8E-3	9.2E-2	7.0E+0	0.0	7.1E+0	7.1E+0	7.0E+0	7.0E+0
J 16	8.9	2570	2.3E-3	1.0E-1	1.2E+1	1.0E-2	1.2E+1	1.2E+1	1.2E+1	1.2E+1
K 18	9.8	1280	6.1E-2	0.0	5.6E-1	3.5E-1	1.0E+0	9.1E-1	9.1E-1	9.1E-1
AVERAGES										
SPREADER, NO REINJ FROM D.C.			1.1E-1	8.7E-2	1.0E+0	0.0	1.2E+0	1.0E+0	1.0E+0	1.0E+0
MASS FIRED OVERFEED			8.6E-2	8.5E-2	4.4E+0	5.6E-2	4.6E+0	4.5E+0	4.4E+0	4.4E+0
HIGH			2.3E-1	1.8E-1	1.2E+1	3.5E-1	1.2E+1	1.2E+1	1.2E+1	1.2E+1
LOW			2.3E-3	1.1E-2	1.4E-1	1.0E-2	2.8E-1	8.0E-2	2.5E-3	5.4E-3

CORRELATIONS WITH -					
FLUE GAS OXYGEN, PERCENT	0.14	0.39	0.04	0.35	0.05
TOTAL ASH	0.22	-0.01	-0.28	-0.57	-0.30
GRATE HEAT RELEASE	-0.05	-0.16	-0.29	-0.32	-0.30
HYDROCARBONS	-0.18	0.29	-0.14	-0.11	-0.14
BOILER EFFICIENCY	-0.42	-0.05	0.13	0.03	0.12
CARBON MONOXIDE	-0.12	-0.25	-0.18	-0.18	-0.19

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

COPPER

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS - NG/J: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210					2.0E-2			
A 35	6.0	3140					7.3E-3			
B 30	6.0	2710	3.5E-2	3.1E-1	1.7E-2	1.8E-1	4.6E-1	3.5E-1	1.2E-1	1.2E-1
B 31	6.0	2670	1.1E-1	2.0E-1	1.8E-2	1.6E-1	4.8E-1	3.3E-1	1.8E-1	1.8E-1
B 33	6.1	2130	1.0E-1	2.0E-1	5.8E-2	1.1E-1	4.7E-1	3.3E-1	1.7E-1	1.7E-1
C 44	8.9	4380	6.8E-1	1.0E-1	4.7E-2	4.1E-1	1.2E+0	5.9E-1	4.6E-1	4.6E-1
C 45	8.3	4360	1.2E+0	1.0E-1	4.5E-2	0.0	1.3E+0	2.2E-1	5.4E-2	4.7E-2
C 46	9.0	3230	1.6E-1	7.4E-2	2.3E-2	0.0	2.6E-1	9.3E-2	2.5E-2	2.4E-2
AVERAGE			2.8E-1	1.2E-1	2.6E-2	1.0E-1	5.3E-1	2.4E-1	1.3E-1	1.3E-1
HIGH			1.2E+0	3.1E-1	5.8E-2	4.1E-1	1.3E+0	5.9E-1	4.6E-1	4.6E-1
LOW			3.5E-2	7.4E-2	1.7E-2	1.0E-1	7.3E-3	7.3E-3	7.3E-3	7.3E-3

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS - NG/J: 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	3.1E-1	1.2E+0	0.0	0.0	1.5E+0	6.6E-1	1.0E-2	2.2E-2
E 16	8.3	2760	1.0E-2	1.3E-2	4.0E-3	0.0	2.7E-2	1.1E-2	4.1E-3	4.0E-3
E 17	6.2	2770	8.2E-2	5.4E-2	1.4E-3	0.0	1.4E-1	3.4E-2	2.3E-3	1.9E-3
F 22	6.0	2980	1.8E-2	3.2E-2	6.3E-3	0.0	5.6E-2	2.4E-2	6.7E-3	6.5E-3
F 30	6.8	2890	6.7E-2	3.2E-2	8.1E-4	0.0	1.0E-1	2.0E-2	1.5E-3	1.2E-3
G 15	8.7	3230	2.2E-1	1.9E-1	1.0E-2	0.0	4.3E-1	1.2E-1	1.3E-2	1.2E-2
G 20	9.2	2320	2.1E-1	1.2E-1	1.1E-2	0.0	3.3E-1	8.3E-2	1.4E-2	1.3E-2
H 11	9.4	1980	1.6E-1	1.0E-1	5.5E-2	0.0	3.1E-1	1.1E-1	5.7E-2	5.9E-2
I 09	5.9	2700	1.9E-1	2.7E-1	1.1E-1	0.0	5.6E-1	2.6E-1	1.1E-1	1.1E-1
I 18	7.8	1670	1.0E-1	3.5E-1	8.3E-2	1.8E+0	2.3E+0	2.0E+0	1.8E+0	1.8E+0
J 15	7.9	1550	1.4E-2	1.5E-1	1.4E-1	1.5E+0	1.8E+0	1.8E+0	1.6E+0	1.6E+0
J 16	8.9	2570	2.3E-3	1.6E-1	2.6E-1	1.7E+0	2.1E+0	2.1E+0	1.9E+0	1.9E+0
K 18	9.8	1280	6.1E-2	0.0	2.5E-2	2.1E-3	8.8E-2	2.9E-2	2.8E-2	2.8E-2
AVERAGES										
SPREADER, NO REINJ FROM D.C.			1.0E-1	7.4E-2	5.7E-3	0.0	1.8E-1	5.0E-2	6.9E-3	6.4E-3
MASS FIRED OVERFEED			1.2E-1	3.2E-1	1.0E-1	7.0E-1	1.2E+0	1.0E+0	8.0E-1	8.0E-1
HIGH			3.1E-1	1.2E+0	2.6E-1	1.8E+0	2.3E+0	2.1E+0	1.9E+0	1.9E+0
LOW			2.3E-3	1.3E-2	8.1E-4	2.1E-3	2.7E-2	1.1E-2	1.5E-3	1.2E-3
CORRELATIONS WITH -										
FLUE GAS OXYGEN, PERCENT			0.36	0.38	0.04	0.05	0.22			
TOTAL ASH			0.04	-0.18	-0.21	-0.43	-0.42			
GRATE HEAT RELEASE			-0.21	-0.59	-0.44	-0.38	-0.61			
HYDROCARBONS			0.10	-0.13	-0.03	-0.19	-0.20			
BOILER EFFICIENCY			-0.49	0.06	0.12	0.17	0.12			
CARBON MONOXIDE			-0.28	-0.22	-0.29	-0.38	-0.39			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

ZINC

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS - NG/J: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210					1.3E-2			
A 35	6.0	3140					2.4E-2			
B 30	6.0	2710	7.0E-3	4.8E-1	5.7E-2	2.0E-2	5.7E-1	4.4E-1	8.1E-2	7.9E-2
B 31	6.0	2670	3.5E-2	2.6E-1	2.9E-2	2.1E-2	3.5E-1	2.5E-1	5.2E-2	5.1E-2
B 33	6.1	2130	3.3E-2	2.7E-1	5.8E-2	1.1E-2	3.7E-1	2.7E-1	7.1E-2	6.9E-2
C 44	8.9	4380	2.0E-1	1.4E-1	2.3E-2	0.0	3.6E-1	1.4E-1	2.6E-2	2.4E-2
C 45	8.3	4360	1.8E-1	8.8E-2	2.2E-2	0.0	2.9E-1	1.0E-1	2.4E-2	2.3E-2
C 46	9.0	3230	1.6E-1	1.3E-1	4.7E-2	0.0	3.4E-1	1.6E-1	4.9E-2	4.7E-2
AVERAGE			7.7E-2	1.7E-1	3.9E-2	6.6E-3	2.9E-1	1.8E-1	4.3E-2	4.1E-2
HIGH			2.0E-1	4.8E-1	5.8E-2	2.1E-2	5.7E-1	4.4E-1	8.1E-2	7.9E-2
LOW			7.0E-3	8.8E-2	2.2E-2	1.1E-2	1.3E-2	1.3E-2	1.3E-2	1.3E-2

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS - NG/J: 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	4.6E-2	1.2E+0	0.0	0.0	1.2E+0	6.5E-1	8.5E-3	1.8E-2
E 16	8.3	2760	6.6E-3	2.6E-3	2.0E-3	0.0	1.1E-2	3.6E-3	2.0E-3	2.0E-3
E 17	6.2	2770	2.7E-2	1.8E-3	1.0E-4	0.0	2.9E-2	2.0E-3	3.0E-4	2.2E-4
F 22	6.0	2980	3.0E-3	6.4E-3	2.5E-3	0.0	1.2E-2	6.1E-3	2.6E-3	2.6E-3
F 30	6.8	2890	6.7E-3	3.2E-3	2.7E-3	0.0	1.3E-2	4.7E-3	2.8E-3	2.7E-3
G 15	8.7	3230	7.4E-2	1.9E-2	6.8E-3	0.0	1.0E-1	2.0E-2	7.5E-3	7.2E-3
G 20	9.2	2320	1.0E-1	1.8E-1	1.5E-2	0.0	2.9E-1	1.2E-1	1.7E-2	1.6E-2
H 11	9.4	1980	3.2E-1	7.3E-3	1.4E-2	0.0	3.4E-1	2.8E-2	1.6E-2	1.9E-2
I 09	5.9	2700	2.4E-1	1.0E+0	2.1E-1	0.0	1.5E+0	7.8E-1	2.2E-1	2.3E-1
I 18	7.8	1670	2.3E-2	2.3E+0	1.9E-2	3.5E-5	2.4E+0	1.3E+0	3.6E-2	5.4E-2
J 15	7.9	1550	1.0E-3	3.1E-1	1.4E-2	0.0	3.2E-1	3.2E-1	1.6E-2	1.9E-2
J 16	8.9	2570	2.3E-3	6.5E-1	2.4E-2	0.0	6.7E-1	6.7E-1	2.8E-2	3.3E-2
K 18	9.8	1280	1.2E-2	0.0	2.5E-2	1.4E-2	5.1E-2	4.0E-2	3.9E-2	3.9E-2
AVERAGES										
SPREADER,NO REINJ FROM D.C.			3.7E-2	3.5E-2	4.9E-3	0.0	7.6E-2	2.5E-2	5.4E-3	5.2E-3
MASS FIRED OVERFEED			9.1E-2	7.8E-1	4.4E-2	2.0E-3	9.2E-1	5.4E-1	5.2E-2	5.9E-2
HIGH			3.2E-1	2.3E+0	2.1E-1	1.4E-2	2.4E+0	1.3E+0	2.2E-1	2.3E-1
LOW			1.0E-3	1.8E-3	1.0E-4	3.5E-5	1.1E-2	2.0E-3	3.0E-4	2.2E-4
CORRELATIONS WITH -										
FLUE GAS OXYGEN, PERCENT			0.06	0.02	-0.38	0.35	0.00			
TOTAL ASH			-0.01	-0.34	0.07	-0.54	-0.32			
GRATE HEAT RELEASE			-0.14	-0.55	-0.26	-0.30	-0.57			
HYDROCARBONS			0.73	-0.22	-0.09	-0.10	-0.12			
BOILER EFFICIENCY			-0.65	-0.26	-0.39	0.05	-0.37			
CARBON MONOXIDE			0.07	-0.32	-0.21	-0.16	-0.32			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

GALLIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS NG/J* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	2.1E-2	3.1E-2	5.7E-4	2.5E-4	5.3E-2	2.6E-2	1.2E-3	9.0E-4
B 31	6.0	2670	1.4E-2	1.8E-2	5.9E-4	2.6E-4	3.3E-2	1.5E-2	1.1E-3	9.1E-4
B 33	6.1	2130	2.0E-2	1.4E-2	1.7E-3	2.8E-4	3.5E-2	1.4E-2	2.3E-3	2.1E-3
C 44	8.9	4380	1.4E-1	7.1E-2	1.9E-4	5.9E-4	2.1E-1	6.6E-2	2.2E-3	1.1E-3
C 45	8.3	4360	1.2E-1	6.4E-2	6.7E-5	5.6E-4	1.8E-1	5.9E-2	1.9E-3	9.1E-4
C 46	9.0	3230	5.4E-2	3.7E-2	2.3E-4	0.0	9.1E-2	3.3E-2	8.7E-4	3.7E-4
AVERAGE			6.1E-2	3.9E-2	5.7E-4	3.2E-4	1.0E-1	3.6E-2	1.6E-3	1.0E-3
HIGH			1.4E-1	7.1E-2	1.7E-3	5.9E-4	2.1E-1	6.6E-2	2.3E-3	2.1E-3
LOW			1.4E-2	1.4E-2	6.7E-5	2.5E-4	3.3E-2	1.4E-2	8.7E-4	3.7E-4

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS NG/J* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	7.7E-3	1.8E-1	0.0	0.0	1.9E-1	1.0E-1	1.3E-3	2.9E-3
E 16	8.3	2760	5.5E-3	3.9E-3	7.9E-5	0.0	9.5E-3	2.4E-3	1.4E-4	1.2E-4
E 17	6.2	2770	5.5E-3	8.1E-3	1.4E-5	0.0	1.4E-2	4.7E-3	1.1E-4	6.8E-5
F 22	6.0	2980	9.1E-3	1.0E-2	6.3E-4	0.0	1.9E-2	6.2E-3	7.6E-4	7.1E-4
F 30	6.8	2890	6.7E-3	1.0E-2	8.1E-5	0.0	1.6E-2	5.5E-3	1.9E-4	1.5E-4
G 15	8.7	3230	1.5E-2	1.3E-1	3.4E-4	0.0	1.4E-1	7.2E-2	1.4E-3	9.2E-4
G 20	9.2	2320	1.0E-2	5.9E-2	3.9E-4	0.0	6.9E-2	3.3E-2	8.7E-4	6.6E-4
H 11	9.4	1980	4.8E-2	2.2E-2	5.5E-4	0.0	7.0E-2	1.4E-2	1.0E-3	1.6E-3
I 09	5.9	2700	1.2E-1	3.4E-2	2.1E-2	0.0	1.7E-1	4.3E-2	2.2E-2	2.3E-2
I 18	7.8	1670	1.6E-2	5.8E-2	2.8E-3	2.8E-4	7.7E-2	3.5E-2	3.6E-3	4.2E-3
J 15	7.9	1550	4.2E-3	3.1E-2	1.4E-3	2.4E-4	3.7E-2	3.7E-2	1.9E-3	2.2E-3
J 16	8.9	2570	1.5E-3	6.5E-2	2.6E-3	3.3E-4	6.9E-2	6.9E-2	3.4E-3	4.0E-3
K 18	9.8	1280	6.1E-3	0.0	1.4E-3	3.5E-3	1.1E-2	5.1E-3	5.0E-3	5.0E-3
AVERAGES										
SPREADER, NO REINJ FROM D.C.			8.6E-3	3.7E-2	2.6E-4	0.0	4.5E-2	2.1E-2	5.7E-4	4.4E-4
MASS FIRED OVERFEED			2.9E-2	5.6E-2	4.3E-3	6.2E-4	9.0E-2	4.4E-2	5.5E-3	6.2E-3
HIGH			1.2E-1	1.8E-1	2.1E-2	3.5E-3	1.9E-1	1.0E-1	2.2E-2	2.3E-2
LOW			1.5E-3	3.9E-3	1.4E-5	2.4E-4	9.5E-3	2.4E-3	1.1E-4	6.8E-5
CORRELATIONS WITH -										
FLUE GAS OXYGEN, PERCENT			-0.34	0.49	-0.43	0.36	0.22			
TOTAL ASH			0.10	0.05	0.09	-0.59	0.10			
GRATE HEAT RELEASE			-0.18	-0.34	-0.26	-0.35	-0.42			
HYDROCARBONS			0.25	-0.18	-0.12	-0.12	-0.04			
BOILER EFFICIENCY			-0.55	-0.14	-0.36	0.08	-0.43			
CARBON MONOXIDE			-0.04	-0.30	-0.20	-0.20	-0.30			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

GERMANIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS - NG/J: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	1.1E-3	7.4E-4	5.7E-3	1.0E-3	8.6E-3	7.4E-3	6.8E-3	6.8E-3
B 31	6.0	2670	7.1E-3	1.3E-3	5.9E-3	1.1E-3	1.5E-2	8.5E-3	7.0E-3	6.9E-3
B 33	6.1	2130	6.5E-3	4.0E-3	5.8E-3	1.1E-3	1.7E-2	1.0E-2	7.0E-3	6.9E-3
C 44	8.9	4380	2.0E-2	3.1E-3	9.3E-4	2.9E-4	2.5E-2	5.3E-3	1.4E-3	1.3E-3
C 45	8.3	4360	6.0E-2	2.1E-3	8.9E-5	2.8E-4	6.2E-2	7.2E-3	8.0E-4	4.6E-4
C 46	9.0	3230	5.4E-2	4.5E-3	1.6E-3	3.0E-4	6.0E-2	1.0E-2	2.3E-3	2.0E-3
AVERAGE			2.5E-2	2.6E-3	3.3E-3	6.8E-4	3.1E-2	8.2E-3	4.2E-3	4.1E-3
HIGH			6.0E-2	4.5E-3	5.9E-3	1.1E-3	6.2E-2	1.0E-2	7.0E-3	6.9E-3
LOW			1.1E-3	7.4E-4	8.9E-5	2.8E-4	8.6E-3	5.3E-3	8.0E-4	4.6E-4

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS - NG/J: 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	2.3E-2	9.4E-3	0.0	0.0	3.2E-2	5.9E-3	2.3E-4	4.9E-4
E 16	8.3	2760	6.6E-3	1.3E-3	2.0E-4	0.0	8.1E-3	1.1E-3	2.5E-4	2.3E-4
E 17	6.2	2770	5.5E-3	9.0E-4	6.0E-5	0.0	6.4E-3	7.3E-4	1.0E-4	8.5E-5
F 22	6.0	2980	2.7E-3	3.2E-2	1.3E-3	0.0	3.6E-2	1.9E-2	1.5E-3	1.4E-3
F 30	6.8	2890	1.3E-2	1.1E-2	2.7E-4	0.0	2.4E-2	6.5E-3	4.4E-4	3.7E-4
G 15	8.7	3230	2.2E-2	3.2E-2	6.8E-3	0.0	6.1E-2	2.5E-2	7.2E-3	7.0E-3
G 23	9.2	2320	2.1E-2	2.9E-2	7.6E-3	0.0	5.8E-2	2.4E-2	8.0E-3	7.8E-3
H 11	9.4	1980	4.8E-2	7.3E-3	8.3E-4	0.0	5.6E-2	6.4E-3	1.2E-3	1.7E-3
I 09	5.9	2700	1.2E-1	6.7E-1	1.3E-1	0.0	9.2E-1	5.0E-1	1.3E-1	1.4E-1
I 18	7.8	1670	2.6E-2	3.5E-1	1.1E-2	2.1E-3	3.9E-1	2.0E-1	1.6E-2	1.9E-2
J 15	7.9	1550	4.2E-3	9.2E-2	2.3E-3	1.8E-3	1.0E-1	1.0E-1	4.8E-3	5.5E-3
J 16	8.9	2570	2.3E-3	2.6E-1	1.3E-2	2.0E-3	2.8E-1	2.8E-1	1.7E-2	1.9E-2
K 18	9.8	1280	6.1E-3	0.0	2.8E-3	7.0E-3	1.6E-2	1.0E-2	1.0E-2	1.0E-2
AVERAGES										
SPREADER, NO REINJ FROM D.C.			1.2E-2	1.8E-2	2.7E-3	0.0	3.2E-2	1.3E-2	2.9E-3	2.8E-3
MASS FIRED OVERFEED			3.2E-2	2.0E-1	2.3E-2	1.8E-3	2.6E-1	1.6E-1	2.6E-2	2.8E-2
HIGH			1.2E-1	6.7E-1	1.3E-1	7.0E-3	9.2E-1	5.0E-1	1.3E-1	1.4E-1
LOW			2.3E-3	9.0E-4	6.0E-5	1.8E-3	6.4E-3	7.3E-4	1.0E-4	8.5E-5

CORRELATIONS WITH -					
FLUE GAS OXYGEN, PERCENT	-0.25	-0.39	-0.42	0.36	-0.39
TOTAL ASH	0.08	0.01	0.16	-0.70	0.03
GRATE HEAT RELEASE	-0.23	-0.33	-0.20	-0.46	-0.31
HYDROCARBONS	0.21	-0.19	-0.13	-0.18	-0.14
BOILER EFFICIENCY	-0.60	-0.38	-0.40	0.12	-0.42
CARBON MONOXIDE	-0.18	-0.28	-0.21	-0.28	-0.26

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15918-564

ARSENIC

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS NG/J: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210					1.2E-4			
A 35	6.0	3140					1.6E-4			
B 30	6.0	2710	3.5E-3	3.5E-2	2.0E-4	2.5E-4	3.9E-2	2.7E-2	7.3E-4	5.2E-4
B 31	6.8	2670	1.1E-2	1.4E-2	9.1E-4	1.3E-4	2.6E-2	1.3E-2	1.2E-3	1.1E-3
B 33	6.1	2130	1.0E-2	3.0E-2	9.0E-4	1.4E-4	4.0E-2	2.4E-2	1.3E-3	1.1E-3
C 44	8.9	4380	4.1E-2	4.1E-2	1.0E-3	4.4E-4	8.3E-2	3.6E-2	2.0E-3	1.5E-3
C 45	8.3	4360	1.8E-1	2.8E-2	4.9E-4	4.2E-4	2.1E-1	3.8E-2	2.4E-3	1.2E-3
C 46	9.0	3230	2.2E-1	1.4E-1	7.5E-4	4.4E-4	3.6E-1	1.3E-1	3.7E-3	1.7E-3
AVERAGE			5.7E-2	3.6E-2	5.3E-4	2.3E-4	9.5E-2	3.3E-2	1.5E-3	9.3E-4
HIGH			2.2E-1	1.4E-1	1.0E-3	4.4E-4	3.6E-1	1.3E-1	3.7E-3	1.7E-3
LOW			3.5E-3	1.4E-2	2.0E-4	1.3E-4	1.2E-4	1.2E-4	1.2E-4	1.2E-4

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS NG/J: 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	3.1E-2	1.2E-1	0.0	0.0	1.5E-1	6.6E-2	1.0E-3	2.2E-3
E 16	8.3	2760	6.6E-3	7.8E-3	8.6E-4	0.0	1.5E-2	5.4E-3	1.0E-3	9.2E-4
E 17	6.2	2770	2.7E-2	8.1E-3	2.1E-4	0.0	3.6E-2	5.6E-3	4.6E-4	3.5E-4
F 22	6.0	2980	1.8E-2	1.0E-2	3.0E-4	0.0	2.8E-2	6.1E-3	4.9E-4	4.1E-4
F 30	6.8	2890	2.2E-2	1.0E-2	3.2E-4	0.0	3.2E-2	6.3E-3	5.4E-4	4.4E-4
G 15	8.7	3230	5.9E-2	5.2E-2	3.6E-4	0.0	1.1E-1	3.1E-2	1.1E-3	8.0E-4
G 23	9.2	2320	2.1E-2	2.9E-2	1.2E-3	0.0	5.1E-2	1.8E-2	1.5E-3	1.4E-3
H 11	9.4	1980	5.3E-1	1.5E-2	5.8E-3	0.0	5.5E-1	3.1E-2	1.0E-2	1.4E-2
I 09	5.9	2700	1.9E-1	2.7E-1	6.4E-1	0.0	1.1E+0	7.9E-1	6.4E-1	6.4E-1
I 18	7.8	1670	1.6E-1	5.8E-1	1.9E-1	3.5E-3	9.4E-1	5.2E-1	2.0E-1	2.1E-1
J 15	7.9	1550	4.2E-2	1.2E-1	1.4E-2	1.8E-3	1.8E-1	1.8E-1	1.7E-2	1.8E-2
J 16	8.9	2570	1.5E-3	1.3E-1	2.6E-2	3.3E-3	1.6E-1	1.6E-1	3.1E-2	3.2E-2
K 18	9.8	1280	1.8E-2	0.0	5.6E-3	1.4E-3	2.5E-2	7.6E-3	7.1E-3	7.3E-3
AVERAGES										
SPREADER, NO REINJ FROM D.C.			2.6E-2	1.9E-2	5.3E-4	0.0	4.6E-2	1.2E-2	8.5E-4	7.1E-4
MASS FIRED OVERFEED			1.4E-1	1.8E-1	1.3E-1	1.4E-3	4.4E-1	2.5E-1	1.3E-1	1.3E-1
HIGH			5.3E-1	5.8E-1	6.4E-1	3.5E-3	1.1E+0	7.9E-1	6.4E-1	6.4E-1
LOW			1.5E-3	7.8E-3	2.1E-4	1.4E-3	1.5E-2	5.4E-3	4.6E-4	3.5E-4
CORRELATIONS WITH -										
FLUE GAS OXYGEN, PERCENT			0.11	-0.13	-0.45	0.16	-0.24			
TOTAL ASH			-0.22	-0.31	0.85	-0.49	-0.28			
GRATE HEAT RELEASE			-0.19	-0.41	-0.25	-0.46	-0.38			
HYDROCARBONS			0.89	-0.20	-0.13	-0.21	0.20			
BOILER EFFICIENCY			-0.56	-0.35	-0.44	0.09	-0.59			
CARBON MONOXIDE			0.21	-0.32	-0.21	-0.34	-0.16			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15918-564

SELENIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - EMISSIONS - - - - NG/J* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210					4.8E-4			
A 35	6.0	3140					6.3E-4			
B 30	6.0	2710	3.5E-3	6.7E-3	2.9E-2	5.1E-3	4.4E-2	3.9E-2	3.4E-2	3.4E-2
B 31	6.0	2670	3.5E-3	3.6E-3	2.9E-2	5.3E-3	4.2E-2	3.8E-2	3.5E-2	3.5E-2
B 33	6.1	2130	3.3E-3	5.6E-3	2.9E-2	5.5E-3	4.3E-2	3.9E-2	3.5E-2	3.5E-2
C 44	8.9	4380	1.4E-1	6.0E-3	2.3E-3	0.0	1.4E-1	1.9E-2	3.3E-3	2.5E-3
C 45	8.3	4360	6.0E-2	2.4E-3	4.5E-4	0.0	6.2E-2	7.5E-3	8.8E-4	5.4E-4
C 46	9.0	3230	1.1E-1	6.7E-3	4.7E-3	0.0	1.2E-1	1.9E-2	5.5E-3	4.9E-3
AVERAGE			3.9E-2	3.9E-3	1.2E-2	2.0E-3	5.7E-2	2.8E-2	1.4E-2	1.4E-2
HIGH			1.4E-1	6.7E-3	2.9E-2	5.5E-3	1.4E-1	3.9E-2	3.5E-2	3.5E-2
LOW			3.3E-3	2.4E-3	4.5E-4	5.1E-3	4.8E-4	4.8E-4	4.8E-4	4.8E-4

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - EMISSIONS - - - - NG/J* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	7.7E-4	1.6E-3	0.0	0.0	2.4E-3	9.2E-4	1.7E-5	3.6E-5
E 16	8.3	2760	2.2E-2	1.3E-3	1.4E-3	0.0	2.5E-2	2.8E-3	1.5E-3	1.5E-3
E 17	6.2	2770	1.8E-2	2.7E-4	7.9E-5	0.0	1.9E-2	8.1E-4	2.1E-4	1.5E-4
F 22	6.0	2980	6.1E-2	2.1E-3	6.3E-4	0.0	6.3E-2	3.7E-3	1.1E-3	8.9E-4
F 30	6.8	2890	4.5E-2	2.1E-3	5.4E-4	0.0	4.7E-2	3.1E-3	8.7E-4	7.3E-4
G 15	8.7	3230	7.4E-3	6.5E-4	6.8E-3	0.0	1.5E-2	7.4E-3	6.9E-3	6.8E-3
G 20	9.2	2320	7.2E-3	4.1E-4	3.8E-3	0.0	1.1E-2	4.3E-3	3.9E-3	3.8E-3
H 11	9.4	1980	1.6E-3	2.2E-4	5.5E-4	0.0	2.4E-3	7.3E-4	5.7E-4	5.8E-4
I 09	5.9	2700	2.4E-3	3.4E-4	2.1E-2	0.0	2.4E-2	2.1E-2	2.1E-2	2.1E-2
I 18	7.8	1670	3.3E-3	5.8E-4	2.8E-1	2.8E-3	2.8E-1	2.8E-1	2.8E-1	2.8E-1
J 15	7.9	1550	2.8E-4	6.1E-4	9.3E-3	2.4E-3	1.3E-2	1.3E-2	1.2E-2	1.2E-2
J 16	8.9	2570	1.5E-4	6.5E-4	1.6E-2	2.7E-3	1.9E-2	1.9E-2	1.8E-2	1.8E-2
K 18	9.8	1280	1.2E-3	0.0	5.6E-3	7.0E-3	1.4E-2	1.3E-2	1.3E-2	1.3E-2
AVERAGES										
SPREADER, NO REINJ FROM D.C.			2.7E-2	1.1E-3	2.2E-3	0.0	3.0E-2	3.7E-3	2.4E-3	2.3E-3
MASS FIRED OVERFEED			1.4E-3	5.7E-4	4.7E-2	2.1E-3	5.1E-2	5.0E-2	4.9E-2	4.9E-2
HIGH			6.1E-2	2.1E-3	2.8E-1	7.0E-3	2.8E-1	2.8E-1	2.8E-1	2.8E-1
LOW			1.5E-4	2.2E-4	7.9E-5	2.4E-3	2.4E-3	7.3E-4	1.7E-5	3.6E-5
CORRELATIONS WITH -										
FLUE GAS OXYGEN, PERCENT			-0.60	-0.26	-0.07	0.35	-0.22			
TOTAL ASH			0.56	0.45	-0.34	-0.72	-0.22			
GRATE HEAT RELEASE			0.76	0.38	-0.22	-0.49	-0.04			
HYDROCARBONS			-0.05	-0.16	-0.12	-0.19	-0.14			
BOILER EFFICIENCY			0.23	0.34	-0.36	0.14	-0.30			
CARBON MONOXIDE			0.80	0.66	-0.20	-0.31	0.00			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

BROMINE

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - EMISSIONS - - - - NG/J* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	1.1E-3	4.5E-4	5.7E-4	1.5E-3	3.6E-3	2.5E-3	2.1E-3	2.1E-3
B 31	6.0	2670	1.1E-3	2.0E-4	5.9E-4	1.6E-3	3.4E-3	2.4E-3	2.2E-3	2.2E-3
B 33	6.1	2130	3.3E-3	5.9E-4	5.9E-4	1.7E-3	6.1E-3	3.0E-3	2.3E-3	2.3E-3
C 44	8.9	4380	6.8E-3	1.1E-3	4.7E-5	0.0	7.9E-3	1.4E-3	1.8E-4	5.8E-5
C 45	8.3	4360	3.0E-3	4.8E-4	4.5E-5	0.0	3.5E-3	6.6E-4	6.9E-5	5.0E-5
C 46	9.0	3230	5.4E-3	1.1E-3	2.3E-5	0.0	6.5E-3	1.3E-3	6.9E-5	3.3E-5
AVERAGE			3.4E-3	6.5E-4	3.1E-4	8.0E-4	5.2E-3	1.9E-3	1.1E-3	1.1E-3
HIGH			6.8E-3	1.1E-3	5.9E-4	1.7E-3	7.9E-3	3.0E-3	2.3E-3	2.3E-3
LOW			1.1E-3	2.0E-4	2.3E-5	1.5E-3	3.4E-3	6.6E-4	6.9E-5	3.3E-5

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - EMISSIONS - - - - NG/J* 10.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	2.3E-4	1.8E-3	0.0	0.0	2.0E-3	1.0E-3	1.4E-5	3.0E-5
E 16	8.3	2760	3.3E-3	1.3E-3	5.9E-3	0.0	1.1E-2	6.8E-3	6.0E-3	6.0E-3
E 17	6.2	2770	2.7E-3	1.8E-3	1.4E-4	0.0	4.7E-3	1.2E-3	1.7E-4	1.6E-4
F 22	6.0	2980	6.1E-3	1.1E-3	1.9E-3	0.0	9.0E-3	2.7E-3	2.0E-3	1.9E-3
F 30	6.8	2890	2.2E-3	1.1E-3	8.1E-4	0.0	4.1E-3	1.5E-3	8.4E-4	8.3E-4
G 15	8.7	3230	1.5E-2	1.9E-3	3.4E-3	0.0	2.0E-2	5.0E-3	3.5E-3	3.5E-3
G 20	9.2	2320	7.2E-3	1.8E-3	1.9E-2	0.0	2.8E-2	2.0E-2	1.9E-2	1.9E-2
H 11	9.4	1980	1.6E-3	7.3E-5	1.1E-3	0.0	2.8E-3	1.2E-3	1.1E-3	1.1E-3
I 09	5.9	2700	4.7E-3	2.4E-3	1.1E-1	0.0	1.1E-1	1.1E-1	1.1E-1	1.1E-1
I 18	7.8	1670	6.5E-3	2.3E-2	1.4E-2	1.1E-2	5.4E-2	3.7E-2	2.5E-2	2.5E-2
J 15	7.9	1550	1.0E-3	6.1E-3	9.3E-3	1.5E-2	3.1E-2	3.1E-2	2.4E-2	2.4E-2
J 16	8.9	2570	2.3E-4	1.0E-3	1.8E-2	1.7E-2	3.6E-2	3.6E-2	3.5E-2	3.5E-2
K 18	9.8	1280	1.2E-3	0.0	5.6E-3	1.1E-2	1.7E-2	1.6E-2	1.6E-2	1.6E-2
AVERAGES										
SPREADER,NO REINJ FROM D.C.			6.0E-3	1.5E-3	5.2E-3	0.0	1.3E-2	6.2E-3	5.3E-3	5.2E-3
MASS FIRED OVERFEED			2.2E-3	4.9E-3	2.2E-2	7.5E-3	3.7E-2	3.3E-2	3.0E-2	3.0E-2
HIGH			1.5E-2	2.3E-2	1.1E-1	1.7E-2	1.1E-1	1.1E-1	1.1E-1	1.1E-1
LOW			2.3E-4	7.3E-5	1.4E-4	1.1E-2	2.0E-3	1.0E-3	1.4E-5	3.0E-5
CORRELATIONS WITH -										
FLUE GAS OXYGEN, PERCENT			-0.15	-0.11	-0.38	0.23	-0.35			
TOTAL ASH			0.48	-0.37	0.11	-0.58	-0.04			
GRATE HEAT RELEASE			0.53	-0.21	-0.23	-0.50	-0.29			
HYDROCARBONS			-0.16	-0.18	-0.17	-0.22	-0.26			
BOILER EFFICIENCY			-0.63	-0.25	-0.38	0.32	-0.42			
CARBON MONOXIDE			-0.05	-0.23	-0.26	-0.36	-0.37			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

RUBIDIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS NG/J 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	7.0E-2	2.7E-2	8.2E-5	1.5E-3	1.0E-1	2.8E-2	2.3E-3	1.8E-3
B 31	6.0	2670	7.1E-2	2.6E-2	1.8E-4	1.6E-3	1.0E-1	2.7E-2	2.4E-3	1.9E-3
B 33	6.1	2130	6.5E-2	3.3E-2	7.9E-5	1.7E-3	1.0E-1	3.2E-2	2.4E-3	1.9E-3
C 44	8.9	4380	1.4E+0	3.3E-2	7.0E-4	0.0	1.4E+0	1.4E-1	1.0E-2	2.8E-3
C 45	8.3	4360	1.2E+0	3.3E-2	4.5E-5	0.0	1.2E+0	1.3E-1	8.6E-3	1.9E-3
C 46	9.0	3230	5.4E-1	5.6E-2	9.4E-5	0.0	5.9E-1	8.9E-2	4.3E-3	1.8E-3
AVERAGE			5.5E-1	3.4E-2	2.0E-4	8.0E-4	5.8E-1	7.5E-2	5.1E-3	1.9E-3
HIGH			1.4E+0	5.6E-2	7.0E-4	1.7E-3	1.4E+0	1.4E-1	1.0E-2	2.8E-3
LOW			6.5E-2	2.6E-2	4.5E-5	1.5E-3	1.0E-1	2.7E-2	2.3E-3	1.0E-3

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS NG/J 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	5.4E-2	6.2E-2	8.8	0.0	1.2E-1	3.6E-2	8.1E-4	1.7E-3
E 16	8.3	2760	3.3E-2	1.3E-2	4.0E-5	0.0	4.6E-2	8.3E-3	3.6E-4	2.2E-4
E 17	6.2	2770	2.7E-2	2.7E-2	2.0E-5	0.0	5.4E-2	1.6E-2	4.0E-4	2.4E-4
F 22	6.0	2980	9.1E-4	8.5E-4	1.0E-4	0.0	1.9E-3	5.9E-4	1.1E-4	1.0E-4
F 30	6.8	2890	1.6E-3	7.4E-4	1.4E-5	0.0	2.3E-3	4.7E-4	3.0E-5	2.3E-5
G 15	8.7	3230	2.2E-1	1.9E-2	3.4E-4	0.0	2.4E-1	1.8E-2	2.0E-3	1.3E-3
G 20	9.2	2320	8.2E-2	2.3E-2	1.5E-3	0.0	1.1E-1	1.7E-2	2.3E-3	1.9E-3
H 11	9.4	1980	3.7E-2	7.3E-3	8.3E-5	0.0	4.4E-2	5.3E-3	3.9E-4	7.5E-4
I 09	5.9	2700	9.4E-2	6.7E-2	1.7E-2	0.0	1.8E-1	5.7E-2	1.8E-2	1.9E-2
I 18	7.8	1670	2.6E-2	5.8E-2	8.3E-4	3.5E-5	8.5E-2	3.3E-2	1.5E-3	2.1E-3
J 15	7.9	1550	2.8E-3	2.5E-2	4.7E-4	0.0	2.8E-2	2.8E-2	6.6E-4	8.8E-4
J 16	8.9	2570	3.1E-3	1.3E-1	1.3E-3	2.3E-4	1.3E-1	1.3E-1	2.5E-3	3.5E-3
K 18	9.8	1280	9.1E-3	0.0	2.8E-4	1.4E-3	1.1E-2	2.0E-3	1.8E-3	1.8E-3
AVERAGES										
SPREADER, NO REINJ FROM D.C.			6.1E-2	1.4E-2	3.4E-4	0.0	7.5E-2	1.8E-2	8.6E-4	6.4E-4
MASS FIRED OVERFEED			3.2E-2	5.0E-2	2.9E-3	2.4E-4	8.5E-2	4.2E-2	3.7E-3	4.3E-3
HIGH			2.2E-1	1.3E-1	1.7E-2	1.4E-3	2.4E-1	1.3E-1	1.8E-2	1.9E-2
LOW			9.1E-4	7.4E-4	1.4E-5	3.5E-5	1.9E-3	4.7E-4	3.0E-5	2.3E-5
CORRELATIONS WITH -										
FLUE GAS OXYGEN, PERCENT			0.14	0.10	-0.42	0.38	0.14			
TOTAL ASH			0.41	0.08	0.15	-0.53	0.35			
GRATE HEAT RELEASE			0.20	-0.51	-0.20	-0.34	-0.11			
HYDROCARBONS			-0.08	-0.26	-0.12	-0.12	-0.21			
BOILER EFFICIENCY			-0.61	0.04	-0.38	0.08	-0.51			
CARBON MONOXIDE			-0.32	-0.45	-0.20	-0.19	-0.51			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

STRONTIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J STRONTIUM	EMISSIONS NG/J* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	0.0	7.0E-1	2.9E-1	2.9E-3	1.5E-3	1.0E+0	2.8E-1	1.1E-2	5.9E-3
B 31	6.0	2670	0.0	1.1E+0	3.0E-1	2.9E-3	1.6E-3	1.4E+0	3.2E-1	1.4E-2	6.6E-3
B 33	6.1	2130	0.0	1.0E+0	4.5E-1	2.9E-3	5.5E-3	1.4E+0	4.3E-1	1.8E-2	1.1E-2
C 44	8.9	4380	0.0	1.4E+2	7.2E-1	2.3E-4	0.0	1.4E+2	1.2E+1	1.0E+0	2.0E-1
C 45	8.3	4360	0.0	6.0E+1	6.3E-1	8.9E-5	2.5E-3	6.0E+1	5.7E+0	4.2E-1	9.3E-2
C 46	9.0	3230	0.0	1.1E+1	4.0E-1	7.0E-4	0.0	1.1E+1	1.2E+0	7.9E-2	1.7E-2
AVERAGE				3.5E+1	4.6E-1	1.6E-3	1.9E-3	3.5E+1	3.4E+0	2.5E-1	5.6E-2
HIGH				1.4E+2	7.2E-1	2.9E-3	5.5E-3	1.4E+2	1.2E+1	1.0E+0	2.0E-1
LOW				7.0E-1	2.9E-1	8.9E-5	1.5E-3	1.0E+0	2.8E-1	1.1E-2	5.9E-3

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J STRONTIUM	EMISSIONS NG/J* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	2.6	7.7E-2	3.8E-2	0.0	0.0	1.1E-1	1.9E-2	7.4E-4	1.6E-3
E 16	8.3	2760	1.9	1.1E-1	9.2E-2	1.8E-4	0.0	2.0E-1	5.4E-2	1.6E-3	1.0E-3
E 17	6.2	2770	0.0	9.1E-2	9.0E-2	2.0E-5	0.0	1.8E-1	5.3E-2	1.3E-3	7.5E-4
F 22	6.0	2980	1.0	9.1E-1	3.2E-2	2.5E-4	0.0	9.4E-1	4.7E-2	6.9E-3	4.0E-3
F 30	6.8	2890	2.4	6.7E-1	3.2E-2	1.4E-4	0.0	7.0E-1	3.9E-2	5.0E-3	2.9E-3
G 15	8.7	3230	2.2	1.5E+0	1.9E-1	1.4E-3	0.0	1.7E+0	1.6E-1	1.3E-2	8.0E-3
G 20	9.2	2320	1.4	9.2E-1	4.7E-2	3.9E-3	0.0	1.0E+0	5.9E-2	1.1E-2	7.8E-3
H 11	3.4	1980	0.0	2.1E-1	1.0E-2	1.7E-4	0.0	2.2E-1	1.2E-2	1.7E-3	3.5E-3
I 09	5.9	2700	0.0	4.7E-1	2.7E-2	2.1E-2	0.0	5.2E-1	5.1E-2	2.5E-2	2.9E-2
I 18	7.8	1670	2.5	1.0E+0	5.8E-2	8.3E-3	2.8E-4	1.0E+0	7.2E-2	1.6E-2	2.4E-2
J 15	7.9	1550	1.8	1.1E-1	3.1E-2	2.3E-3	2.9E-5	1.5E-1	1.5E-1	3.4E-3	4.5E-3
J 16	8.9	2570	0.0	6.1E-2	1.9E-2	5.3E-3	2.7E-4	8.6E-2	8.6E-2	6.1E-3	6.7E-3
K 18	9.8	1280	0.0	1.5E-1	0.0	1.7E-4	7.0E-4	1.5E-1	5.7E-3	1.9E-3	3.2E-3
AVERAGES											
SPREADER, NO REINJ FROM D.C.				7.8E-1	8.1E-2	1.8E-3	0.0	7.8E-1	6.8E-2	6.4E-3	4.1E-3
MASS FIRED OVERFEED				3.8E-1	2.5E-2	5.4E-3	1.8E-4	3.3E-1	5.6E-2	7.8E-3	1.0E-2
HIGH				1.5E+0	1.9E-1	2.1E-2	7.0E-4	1.7E+0	1.6E-1	2.5E-2	2.9E-2
LOW				6.1E-2	1.0E-2	2.0E-5	2.9E-5	8.6E-2	5.7E-3	7.4E-4	7.5E-4

CORRELATIONS WITH -					
FLUE GAS OXYGEN, PERCENT	-0.19	-0.08	-0.38	0.36	-0.19
TOTAL ASH	0.40	0.56	0.04	-0.61	0.43
ASH STRONTIUM	0.41	0.36	-0.23	-0.29	0.42
GRATE HEAT RELEASE	0.57	0.48	-0.27	-0.44	0.58
HYDROCARBONS	-0.13	-0.26	-0.19	-0.17	-0.15
BOILER EFFICIENCY	-0.63	-0.24	-0.45	0.02	-0.62
CARBON MONOXIDE	0.20	-0.27	-0.30	-0.27	0.16

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15918-564

YTTRIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS NG/J 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	2.5E-2	6.1E-3	8.2E-5	1.0E-3	3.2E-2	7.8E-3	1.3E-3	1.1E-3
B 31	6.0	2670	2.5E-2	5.4E-3	1.2E-4	1.1E-3	3.1E-2	7.4E-3	1.4E-3	1.2E-3
B 33	6.1	2130	2.3E-2	1.4E-2	1.2E-4	1.1E-3	3.8E-2	1.3E-2	1.5E-3	1.3E-3
C 44	8.9	4380	3.4E-1	6.2E-3	9.3E-6	0.0	3.4E-1	3.4E-2	2.4E-3	5.3E-4
C 45	8.3	4360	3.0E-1	3.0E-3	8.9E-6	0.0	3.0E-1	2.8E-2	2.1E-3	4.6E-4
C 46	9.0	3230	1.6E-1	7.8E-3	4.7E-6	0.0	1.7E-1	1.9E-2	1.2E-3	2.6E-4
AVERAGE			1.4E-1	6.9E-3	5.7E-5	5.3E-4	1.5E-1	1.9E-2	1.7E-3	8.2E-4
HIGH			3.4E-1	1.4E-2	1.2E-4	1.1E-3	3.4E-1	3.4E-2	2.4E-3	1.3E-3
LOW			2.3E-2	3.0E-3	4.7E-6	1.0E-3	3.1E-2	7.4E-3	1.2E-3	2.6E-4

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS NG/J 10.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	13.2	2070	2.3E-1	4.5E-2	0.0	0.0	2.8E-1	3.2E-2	1.9E-3	4.1E-3
E 16	8.3	2760	6.6E-2	3.9E-2	7.9E-5	0.0	1.1E-1	2.4E-2	8.1E-4	5.0E-4
E 17	6.2	2770	2.7E-2	2.7E-2	1.2E-5	0.0	5.4E-2	1.6E-2	3.9E-4	2.3E-4
F 22	6.0	2980	9.1E-2	3.2E-3	1.0E-4	0.0	9.4E-2	4.8E-3	7.5E-4	4.7E-4
F 30	6.8	2890	6.7E-2	3.2E-3	2.7E-5	0.0	7.0E-2	3.9E-3	5.2E-4	3.1E-4
G 15	8.7	3230	5.9E-2	5.2E-3	6.8E-4	0.0	6.5E-2	5.4E-3	1.1E-3	9.4E-4
G 20	9.2	2320	8.2E-2	4.7E-3	3.9E-4	0.0	8.7E-2	5.6E-3	1.0E-3	7.4E-4
H 11	9.4	1980	4.8E-2	2.2E-3	1.4E-4	0.0	5.0E-2	2.9E-3	4.9E-4	8.8E-4
I 09	5.9	2730	7.1E-2	2.7E-3	4.2E-3	0.0	7.8E-2	8.0E-3	4.8E-3	5.3E-3
I 18	7.8	1670	1.0E-1	5.8E-3	1.9E-3	3.5E-4	1.1E-1	8.6E-3	3.0E-3	3.9E-3
J 15	7.9	1550	7.0E-3	2.5E-3	2.3E-4	2.9E-4	1.0E-2	1.0E-2	5.9E-4	6.7E-4
J 16	8.9	2570	2.3E-3	1.6E-3	2.4E-3	3.3E-4	6.6E-3	6.6E-3	2.7E-3	2.8E-3
K 18	9.8	1280	1.2E-2	0.0	5.6E-4	2.8E-3	1.6E-2	3.8E-3	3.5E-3	3.6E-3
AVERAGES										
SPREADER,NO REINJ FROM D.C.			6.5E-2	1.4E-2	2.1E-4	0.0	7.9E-2	1.0E-2	7.7E-4	5.3E-4
MASS FIRED OVERFEED			6.7E-2	8.6E-3	1.4E-3	5.4E-4	7.7E-2	1.0E-2	2.4E-3	3.0E-3
HIGH			2.3E-1	4.5E-2	4.2E-3	2.8E-3	2.8E-1	3.2E-2	4.8E-3	5.3E-3
LOW			2.3E-3	1.6E-3	1.2E-5	2.9E-4	6.6E-3	2.9E-3	3.9E-4	2.3E-4
CORRELATIONS WITH -										
FLUE GAS OXYGEN, PERCENT			0.20	0.17	-0.28	0.36	0.21			
TOTAL ASH			0.06	0.13	0.04	-0.62	0.07			
GRATE HEAT RELEASE			-0.21	-0.19	-0.33	-0.38	-0.23			
HYDROCARBONS			-0.08	-0.20	-0.20	-0.14	-0.12			
BOILER EFFICIENCY			-0.11	0.36	-0.41	0.08	-0.02			
CARBON MONOXIDE			0.12	-0.24	-0.34	-0.22	0.04			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

ZIRCONIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS NG/J 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	1.4E-2	1.3E-3	5.7E-4	2.0E-3	1.8E-2	4.8E-3	2.7E-3	2.6E-3
B 31	6.0	2670	3.5E-2	7.3E-3	5.9E-5	2.1E-3	4.5E-2	1.1E-2	2.5E-3	2.2E-3
B 33	6.1	2130	6.5E-2	1.3E-2	2.9E-3	2.2E-3	8.3E-2	2.1E-2	5.7E-3	5.2E-3
C 44	8.9	4380	2.0E+0	3.5E-2	1.6E-4	0.0	2.1E+0	2.1E-1	1.5E-2	3.3E-3
C 45	8.3	4360	1.8E+0	2.4E-2	1.8E-4	0.0	1.8E+0	1.8E-1	1.3E-2	2.9E-3
C 46	9.0	3230	3.8E-1	1.5E-2	9.4E-4	0.0	3.9E-1	4.5E-2	3.7E-3	1.5E-3
AVERAGE			7.2E-1	1.6E-2	8.0E-4	1.1E-3	7.4E-1	7.7E-2	7.0E-3	3.8E-3
HIGH			2.0E+0	3.5E-2	2.9E-3	2.2E-3	2.1E+0	2.1E-1	1.5E-2	5.2E-3
LOW			1.4E-2	1.3E-3	5.9E-5	2.0E-3	1.8E-2	4.8E-3	2.5E-3	1.5E-3

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS NG/J 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	7.7E-2	1.5E-2	0.0	0.0	9.2E-2	1.1E-2	6.4E-4	1.4E-3
E 16	8.3	2760	2.2E-1	1.2E-1	2.0E-3	0.0	3.4E-1	7.4E-2	4.3E-3	3.3E-3
E 17	6.2	2770	1.8E-1	8.1E-2	2.0E-5	0.0	2.6E-1	5.1E-2	1.9E-3	1.1E-3
F 22	6.0	2980	2.7E-1	1.0E-2	1.0E-3	0.0	2.8E-1	1.5E-2	2.9E-3	2.1E-3
F 33	6.8	2890	2.0E-1	1.0E-2	1.6E-4	0.0	2.1E-1	1.2E-2	1.6E-3	1.0E-3
G 15	8.7	3230	7.4E-1	1.9E-2	1.4E-3	0.0	7.6E-1	3.6E-2	6.7E-3	4.4E-3
G 20	9.2	2320	3.1E-1	2.9E-2	1.5E-3	0.0	3.4E-1	2.8E-2	3.9E-3	2.9E-3
H 11	9.4	1980	1.6E-1	4.9E-3	8.3E-4	0.0	1.6E-1	8.6E-3	2.0E-3	3.3E-3
I 39	5.9	2700	2.4E-1	6.7E-3	1.3E-2	0.0	2.5E-1	2.4E-2	1.4E-2	1.6E-2
I 18	7.8	1670	1.6E-1	1.2E-2	2.8E-3	1.1E-3	1.8E-1	1.5E-2	5.1E-3	6.5E-3
J 15	7.9	1550	2.8E-2	1.2E-2	1.4E-3	8.8E-4	4.3E-2	4.3E-2	2.6E-3	2.9E-3
J 16	8.9	2570	3.8E-3	6.5E-3	5.3E-3	1.0E-3	1.7E-2	1.7E-2	6.3E-3	6.4E-3
K 18	9.8	1280	1.8E-2	0.0	1.4E-3	7.0E-3	2.7E-2	9.0E-3	8.6E-3	8.7E-3
AVERAGES										
SPREADER, NO REINJ FROM D.C.			3.2E-1	4.5E-2	1.0E-3	0.0	3.7E-1	3.6E-2	3.6E-3	2.5E-3
MASS FIRED OVERFEED			1.0E-1	8.1E-3	3.5E-3	1.4E-3	1.1E-1	1.8E-2	5.7E-3	6.5E-3
HIGH			7.4E-1	1.2E-1	1.3E-2	7.0E-3	7.6E-1	7.4E-2	1.4E-2	1.6E-2
LOW			3.8E-3	4.9E-3	2.0E-5	8.8E-4	1.7E-2	8.6E-3	6.4E-4	1.0E-3
CORRELATIONS WITH -										
FLUE GAS OXYGEN, PERCENT			-0.15	-0.15	-0.34	0.36	-0.17			
TOTAL ASH			0.65	0.33	0.12	-0.63	0.68			
GRATE HEAT RELEASE			0.63	0.27	-0.28	-0.39	0.65			
HYDROCARBONS			-0.05	-0.26	-0.16	-0.14	-0.09			
BOILER EFFICIENCY			-0.56	0.25	-0.36	0.09	-0.50			
CARBON MONOXIDE			0.05	-0.27	-0.29	-0.23	-0.01			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

NIOBIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS - NG/J: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	1.8E-3	3.7E-4	8.6E-4	1.0E-3	4.0E-3	2.3E-3	1.9E-3	1.9E-3
B 31	6.0	2670	1.1E-2	7.9E-4	8.7E-4	1.1E-3	1.3E-2	3.5E-3	2.0E-3	1.9E-3
B 33	6.1	2130	6.5E-3	7.8E-4	2.3E-3	1.1E-3	1.1E-2	4.6E-3	3.5E-3	3.4E-3
C 44	8.9	4380	1.4E-1	3.7E-3	4.7E-4	0.0	1.4E-1	1.5E-2	1.4E-3	6.8E-4
C 45	8.3	4360	1.2E-1	3.0E-3	8.9E-5	0.0	1.2E-1	1.3E-2	9.4E-4	2.7E-4
C 46	9.0	3230	2.7E-2	3.7E-3	4.7E-4	0.0	3.1E-2	5.6E-3	6.8E-4	5.1E-4
AVERAGE			5.0E-2	2.1E-3	8.4E-4	5.3E-4	5.3E-2	7.3E-3	1.7E-3	1.5E-3
HIGH			1.4E-1	3.7E-3	2.3E-3	1.1E-3	1.4E-1	1.5E-2	3.5E-3	3.4E-3
LOW			1.8E-3	3.7E-4	8.9E-5	1.0E-3	4.0E-3	2.3E-3	6.8E-4	2.7E-4

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS - NG/J: 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	7.7E-3	6.5E-4	0.0	0.0	8.3E-3	6.8E-4	5.8E-5	1.2E-4
E 16	8.3	2760	6.6E-3	7.8E-3	2.0E-3	0.0	1.6E-2	6.5E-3	2.1E-3	2.0E-3
E 17	6.2	2770	5.5E-3	5.4E-3	1.0E-5	0.0	1.1E-2	3.2E-3	8.6E-5	5.3E-5
F 22	6.0	2980	1.8E-2	6.4E-4	2.5E-3	0.0	2.1E-2	3.5E-3	2.7E-3	2.6E-3
F 30	6.8	2890	1.3E-2	6.4E-4	5.4E-4	0.0	1.5E-2	1.3E-3	6.4E-4	6.0E-4
G 15	8.7	3230	2.2E-2	1.3E-3	2.4E-3	0.0	2.6E-2	3.0E-3	2.5E-3	2.5E-3
G 20	9.2	2320	3.1E-2	1.8E-3	7.6E-3	0.0	4.0E-2	1.0E-2	7.8E-3	7.7E-3
H 11	9.4	1980	3.2E-3	1.5E-4	8.3E-4	0.0	4.1E-3	1.0E-3	8.5E-4	8.8E-4
I 09	5.9	2700	1.2E-2	6.7E-4	4.2E-2	0.0	5.5E-2	4.3E-2	4.3E-2	4.3E-2
I 18	7.8	1670	1.6E-2	5.8E-4	2.8E-3	3.5E-4	2.0E-2	4.0E-3	3.2E-3	3.4E-3
J 15	7.9	1550	7.0E-4	6.1E-4	2.3E-3	2.9E-4	3.9E-3	3.9E-3	2.6E-3	2.7E-3
J 16	8.9	2570	6.1E-4	6.5E-4	5.3E-3	3.3E-4	6.9E-3	6.9E-3	5.6E-3	5.6E-3
K 18	9.8	1280	1.2E-3	0.0	5.6E-4	2.8E-3	4.6E-3	3.4E-3	3.4E-3	3.4E-3
AVERAGES										
SPREADER, NO REINJ FROM D.C.			1.6E-2	2.9E-3	2.5E-3	0.0	2.2E-2	4.6E-3	2.6E-3	2.6E-3
MASS FIRED OVERFEED			5.9E-3	4.7E-4	7.7E-3	5.4E-4	1.5E-2	9.0E-3	8.3E-3	8.4E-3
HIGH			3.1E-2	7.8E-3	4.2E-2	2.8E-3	5.5E-2	4.3E-2	4.3E-2	4.3E-2
LOW			6.1E-4	1.5E-4	1.0E-5	2.9E-4	3.9E-3	6.0E-4	5.0E-5	5.3E-5
CORRELATIONS WITH -										
FLUE GAS OXYGEN, PERCENT			-0.14	-0.18	-0.42	0.36	-0.41			
TOTAL ASH			0.41	0.37	0.18	-0.62	0.41			
GRATE HEAT RELEASE			0.55	0.29	-0.16	-0.38	0.24			
HYDROCARBONS			-0.20	-0.21	-0.14	-0.14	-0.26			
BOILER EFFICIENCY			-0.56	0.25	-0.40	0.08	-0.60			
CARBON MONOXIDE			0.14	-0.27	-0.20	-0.22	-0.12			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

MOLYBDENUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS NG/J: 10 µM + 3 µM CYCLONE	1 UM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210					3.7E-3			
A 35	6.0	3140					4.4E-3			
B 30	6.0	2710	1.1E-3	1.5E-2	2.0E-1	5.1E-3	2.2E-1	2.2E-1	2.1E-1	2.1E-1
B 31	6.0	2670	7.1E-3	9.4E-3	2.0E-1	5.3E-3	2.3E-1	2.2E-1	2.1E-1	2.1E-1
B 33	6.1	2130	3.3E-3	9.2E-3	5.8E-1	5.5E-3	6.0E-1	5.9E-1	5.8E-1	5.8E-1
C 44	8.9	4380	2.0E-1	5.0E-2	1.2E-1	0.0	3.7E-1	1.7E-1	1.2E-1	1.2E-1
C 45	8.3	4360	1.0E-1	2.7E-2	4.5E-2	0.0	2.5E-1	8.1E-2	4.6E-2	4.5E-2
C 46	9.0	3230	3.0E-2	1.6E-2	7.0E-2	0.0	1.2E-1	8.6E-2	7.1E-2	7.0E-2
AVERAGE			5.4E-2	1.6E-2	1.5E-1	2.0E-3	2.2E-1	1.7E-1	1.6E-1	1.6E-1
HIGH			2.0E-1	5.0E-2	5.8E-1	5.5E-3	6.0E-1	5.9E-1	5.8E-1	5.8E-1
LOW			1.1E-3	9.2E-3	4.5E-2	5.1E-3	3.7E-3	3.7E-3	3.7E-3	3.7E-3

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS NG/J: 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	11.2	2070	7.7E-3	6.8E-2	0.0	0.0	6.8E-2	3.3E-2	4.7E-4	1.0E-3
E 16	8.3	2760	1.0E-2	3.9E-2	2.0E-2	0.0	6.9E-2	4.2E-2	2.0E-2	2.0E-2
E 17	6.2	2770	2.7E-3	8.1E-3	6.0E-3	0.0	1.7E-2	1.1E-2	6.0E-3	6.0E-3
F 22	6.0	2980	2.7E-2	1.0E-2	3.2E-2	0.0	6.9E-2	3.8E-2	3.2E-2	3.2E-2
F 30	6.8	2890	2.2E-2	1.0E-2	2.7E-2	0.0	5.9E-2	3.3E-2	2.7E-2	2.7E-2
G 15	8.7	3230	5.9E-3	1.9E-3	1.0E-1	0.0	1.1E-1	1.0E-1	1.0E-1	1.0E-1
G 20	9.2	2320	5.1E-3	5.9E-3	1.1E-1	0.0	1.3E-1	1.2E-1	1.1E-1	1.1E-1
H 11	9.4	1980	1.6E-2	1.5E-2	1.1E-1	0.0	1.4E-1	1.2E-1	1.1E-1	1.1E-1
I 09	5.9	2700	4.7E-2	1.7E-2	2.1E-1	0.0	2.8E-1	2.2E-1	2.1E-1	2.1E-1
I 18	7.8	1670	1.0E-2	3.5E-2	2.8E-1	1.8E-2	3.4E-1	3.1E-1	3.0E-1	3.0E-1
J 15	7.9	1550	4.2E-4	9.2E-3	1.4E-1	1.5E-2	1.6E-1	1.6E-1	1.5E-1	1.6E-1
J 16	8.9	2570	2.3E-4	3.2E-2	1.3E-1	1.7E-2	1.8E-1	1.8E-1	1.5E-1	1.5E-1
K 16	9.8	1280	1.8E-3	0.0	2.5E-1	7.0E-3	2.6E-1	2.6E-1	2.6E-1	2.6E-1
AVERAGES										
SPREADER, NO REINJ FROM D.C.			1.2E-2	1.2E-2	5.0E-2	0.0	7.5E-2	5.7E-2	5.0E-2	5.0E-2
MASS FIRED OVERFEED			1.2E-2	2.4E-2	1.6E-1	8.0E-3	2.0E-1	1.8E-1	1.7E-1	1.7E-1
HIGH			4.7E-2	6.0E-2	2.8E-1	1.8E-2	3.4E-1	3.1E-1	3.0E-1	3.0E-1
LOW			2.3E-4	1.9E-3	6.0E-3	7.0E-3	1.7E-2	1.1E-2	4.7E-4	1.0E-3
CORRELATIONS WITH -										
FLUE GAS OXYGEN, PERCENT			-0.61	0.30	0.12	0.14	0.10			
TOTAL ASH			0.37	-0.09	-0.59	-0.55	-0.57			
GRATE HEAT RELEASE			0.18	-0.55	-0.45	-0.47	-0.54			
HYDROCARBONS			0.15	-0.10	-0.04	-0.22	-0.06			
BOILER EFFICIENCY			-0.38	0.17	-0.48	0.19	-0.47			
CARBON MONOXIDE			0.44	-0.20	-0.38	-0.35	-0.37			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

RUTHENIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS - NG/J: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	1.1E-3	6.7E-5	1.1E-4	2.0E-3	3.3E-3	2.3E-3	2.2E-3	2.2E-3
B 31	6.0	2670	1.1E-3	6.4E-5	1.2E-4	2.1E-3	3.4E-3	2.4E-3	2.2E-3	2.2E-3
B 33	6.1	2130	1.0E-3	1.0E-4	1.2E-4	2.2E-3	3.4E-3	2.5E-3	2.3E-3	2.3E-3
C 44	8.9	4380	2.0E-3	5.0E-5	4.7E-5	0.0	2.1E-3	2.6E-4	6.1E-5	5.0E-5
C 45	8.3	4360	1.8E-3	4.0E-5	4.5E-5	0.0	1.9E-3	2.3E-4	5.8E-5	4.7E-5
C 46	9.0	3230	1.6E-3	5.6E-5	4.7E-5	0.0	1.7E-3	2.3E-4	5.9E-5	4.9E-5
AVERAGE			1.4E-3	6.3E-5	8.1E-5	1.1E-3	2.6E-3	1.3E-3	1.2E-3	1.1E-3
HIGH			2.0E-3	1.0E-4	1.2E-4	2.2E-3	3.4E-3	2.5E-3	2.3E-3	2.3E-3
LOW			1.0E-3	4.0E-5	4.5E-5	2.0E-3	1.7E-3	2.3E-4	5.8E-5	4.7E-5

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS - NG/J: 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	1.5E-4	1.5E-4	0.0	0.0	3.0E-4	8.6E-5	2.1E-6	4.5E-6
E 16	8.3	2760	3.3E-4	1.2E-4	1.0E-4	0.0	5.5E-4	1.7E-4	1.0E-4	1.0E-4
E 17	6.2	2770	8.2E-4	8.1E-5	6.0E-5	0.0	1.0E-3	1.3E-4	6.6E-5	6.3E-5
F 22	6.0	2980	9.1E-4	1.0E-4	2.5E-4	0.0	1.3E-3	3.4E-4	2.6E-4	2.6E-4
F 30	6.8	2890	6.7E-4	1.0E-4	2.7E-4	0.0	1.0E-3	3.4E-4	2.8E-4	2.7E-4
G 15	8.7	3230	6.6E-4	5.8E-5	6.8E-4	0.0	1.4E-3	7.4E-4	6.9E-4	6.8E-4
G 20	9.2	2320	5.1E-4	2.9E-5	7.8E-4	0.0	1.3E-3	8.1E-4	7.8E-4	7.8E-4
H 11	9.4	1980	1.6E-4	7.3E-6	5.5E-4	0.0	7.2E-4	5.6E-4	5.6E-4	5.6E-4
I 09	5.9	2700	1.2E-4	1.7E-5	2.1E-2	0.0	2.1E-2	2.1E-2	2.1E-2	2.1E-2
I 18	7.8	1670	2.9E-4	3.5E-5	1.9E-3	2.1E-3	4.4E-3	4.1E-3	4.0E-3	4.1E-3
J 15	7.9	1550	1.3E-5	1.5E-5	1.4E-3	1.8E-3	3.2E-3	3.2E-3	3.2E-3	3.2E-3
J 16	8.9	2570	6.9E-6	2.9E-5	2.4E-3	2.0E-3	4.4E-3	4.4E-3	4.4E-3	4.4E-3
K 18	9.8	1280	1.2E-4	0.0	2.8E-3	1.4E-2	1.7E-2	1.7E-2	1.7E-2	1.7E-2
AVERAGES										
SPREADER,NO REINJ FROM D.C.			6.5E-4	8.0E-5	3.6E-4	0.0	1.1E-3	4.2E-4	3.6E-4	3.6E-4
MASS FIRED OVERFEED			1.2E-4	3.6E-5	4.3E-3	2.9E-3	7.3E-3	7.2E-3	7.2E-3	7.2E-3
HIGH			9.1E-4	1.5E-4	2.1E-2	1.4E-2	2.1E-2	2.1E-2	2.1E-2	2.1E-2
LOW			6.9E-6	7.3E-6	6.0E-5	1.8E-3	3.0E-4	8.6E-5	2.1E-6	4.5E-6
CORRELATIONS WITH -										
FLUE GAS OXYGEN, PERCENT			-0.52	-0.10	-0.39	0.36	-0.15			
TOTAL ASH			0.66	0.48	0.07	-0.63	-0.27			
GRATE HEAT RELEASE			0.89	0.24	-0.26	-0.39	-0.40			
HYDROCARBONS			-0.11	-0.27	-0.12	-0.14	-0.19			
BOILER EFFICIENCY			-0.02	0.39	-0.36	0.09	-0.25			
CARBON MONOXIDE			0.49	0.25	-0.22	-0.23	-0.29			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

RHODIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - EMISSIONS - - - - NG/J* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	1.8E-4	1.0E-4	2.9E-5	5.1E-4	8.1E-4	6.3E-4	5.4E-4	5.4E-4
B 31	6.0	2670	1.8E-4	6.5E-5	3.0E-5	5.3E-4	8.0E-4	6.2E-4	5.6E-4	5.6E-4
B 33	6.1	2130	1.6E-4	5.6E-5	2.9E-5	5.5E-4	8.0E-4	6.4E-4	5.9E-4	5.8E-4
C 44	8.9	4380	2.0E-3	2.8E-5	2.3E-5	0.0	2.1E-3	2.2E-4	3.8E-5	2.6E-5
C 45	8.3	4360	6.0E-4	2.9E-5	2.2E-5	0.0	6.5E-4	1.0E-4	2.7E-5	2.3E-5
C 46	9.0	3238	5.4E-4	3.3E-5	1.2E-5	5.9E-4	1.2E-3	6.7E-4	6.1E-4	6.0E-4
AVERAGE			6.1E-4	5.2E-5	2.4E-5	3.6E-4	1.1E-3	4.8E-4	3.9E-4	3.9E-4
HIGH			2.0E-3	1.0E-4	3.0E-5	5.9E-4	2.1E-3	6.7E-4	6.1E-4	6.0E-4
LOW			1.6E-4	2.8E-5	1.2E-5	5.1E-4	6.5E-4	1.0E-4	2.7E-5	2.3E-5

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - EMISSIONS - - - - NG/J* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	5.4E-5	1.3E-4	0.0	0.0	1.8E-4	7.3E-5	1.3E-6	2.8E-6
E 16	8.3	2760	2.2E-4	2.6E-5	4.0E-5	0.0	2.8E-4	6.1E-5	4.1E-5	4.1E-5
E 17	6.2	2770	1.8E-4	1.8E-5	4.0E-5	0.0	2.4E-4	5.5E-5	4.1E-5	4.0E-5
F 22	6.0	2980	6.1E-4	2.1E-5	1.3E-4	0.0	7.6E-4	1.6E-4	1.3E-4	1.3E-4
F 30	6.8	2890	4.5E-4	2.1E-5	1.1E-4	0.0	5.7E-4	1.3E-4	1.1E-4	1.1E-4
G 15	8.7	3230	1.5E-4	2.6E-5	6.8E-4	0.0	8.5E-4	7.0E-4	6.8E-4	6.8E-4
G 20	9.2	2320	2.1E-4	1.2E-5	7.6E-4	0.0	1.0E-3	7.7E-4	7.6E-4	7.6E-4
H 11	9.4	1980	1.6E-4	7.3E-6	2.2E-4	0.0	3.9E-4	2.3E-4	2.2E-4	2.2E-4
I 09	5.9	2700	1.2E-4	3.0E-5	6.5E-3	0.0	6.6E-3	8.5E-3	8.5E-3	8.5E-3
I 18	7.8	1670	1.6E-4	5.8E-5	1.1E-3	1.1E-3	2.4E-3	2.2E-3	2.2E-3	2.2E-3
J 15	7.9	1550	1.3E-5	2.8E-5	7.0E-4	8.8E-4	1.6E-3	1.6E-3	1.6E-3	1.6E-3
J 16	8.9	2570	6.9E-6	2.9E-5	1.3E-3	1.8E-3	2.3E-3	2.3E-3	2.3E-3	2.3E-3
K 18	9.8	1280	6.1E-5	0.0	8.4E-4	7.0E-3	7.9E-3	7.9E-3	7.9E-3	7.9E-3
AVERAGES										
SPREADER,NO REINJ FROM D.C.			3.8E-4	2.1E-5	2.9E-4	0.0	6.1E-4	3.1E-4	3.0E-4	2.9E-4
MASS FIRED OVERFEED			8.2E-5	4.0E-5	1.8E-3	1.4E-3	3.4E-3	3.3E-3	3.2E-3	3.2E-3
HIGH			6.1E-4	1.3E-4	8.5E-3	7.0E-3	8.6E-3	8.5E-3	8.5E-3	8.5E-3
LOW			6.9E-6	7.3E-6	4.0E-5	8.8E-4	1.8E-4	5.5E-5	1.3E-6	2.8E-6
CORRELATIONS WITH -										
FLUE GAS OXYGEN, PERCENT			-0.56	0.26	-0.39	0.36	-0.09			
TOTAL ASH			0.53	-0.16	0.09	-0.63	-0.33			
GRATE HEAT RELEASE			0.77	-0.50	-0.24	-0.39	-0.42			
HYDROCARBONS			0.88	-0.24	-0.14	-0.14	-0.21			
BOILER EFFICIENCY			-0.03	0.16	-0.39	0.09	-0.25			
CARBON MONOXIDE			0.84	-0.17	-0.25	-0.23	-0.38			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

PALADIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - - - - NG/J* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	7.8E-4	6.1E-5	2.9E-4	2.0E-3	3.1E-3	2.4E-3	2.3E-3	2.3E-3
B 31	6.0	2670	7.1E-4	5.7E-5	3.0E-4	2.1E-3	3.2E-3	2.5E-3	2.4E-3	2.4E-3
B 33	6.1	2130	1.3E-3	9.2E-5	2.9E-4	2.2E-3	3.9E-3	2.7E-3	2.5E-3	2.5E-3
C 44	8.9	4380	4.7E-3	7.8E-5	4.7E-5	0.0	4.9E-3	5.2E-4	8.0E-5	5.4E-5
C 45	8.3	4360	4.2E-3	7.2E-5	4.5E-5	0.0	4.3E-3	4.7E-4	7.4E-5	5.1E-5
C 46	9.0	3230	3.8E-3	7.8E-5	2.3E-5	0.0	3.9E-3	4.1E-4	5.8E-5	2.9E-5
AVERAGE			2.6E-3	7.3E-5	1.7E-4	1.1E-3	3.9E-3	1.5E-3	1.2E-3	1.2E-3
HIGH			4.7E-3	9.2E-5	3.0E-4	2.2E-3	4.9E-3	2.7E-3	2.5E-3	2.5E-3
LOW			7.8E-4	5.7E-5	2.3E-5	2.0E-3	3.1E-3	4.1E-4	5.8E-5	2.9E-5

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SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - - - - NG/J* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2670	3.8E-4	1.8E-4	0.0	0.0	5.6E-4	1.1E-4	3.9E-6	8.4E-6
E 16	8.3	2760	6.6E-4	7.8E-5	1.8E-4	0.0	9.1E-4	2.4E-4	1.8E-4	1.8E-4
E 17	6.2	2770	5.5E-4	8.1E-5	6.0E-5	0.0	6.9E-4	1.2E-4	6.4E-5	6.2E-5
F 22	6.0	2980	1.8E-3	6.4E-5	6.3E-4	0.0	2.5E-3	7.3E-4	6.5E-4	6.4E-4
F 33	6.8	2890	1.3E-3	6.4E-5	2.7E-4	0.0	1.7E-3	3.5E-4	2.8E-4	2.8E-4
G 15	8.7	3230	3.7E-4	1.3E-4	6.8E-4	0.0	1.2E-3	7.6E-4	6.9E-4	6.8E-4
G 20	9.2	2320	9.2E-4	5.3E-5	7.6E-4	0.0	1.7E-3	8.2E-4	7.7E-4	7.6E-4
H 11	9.4	1980	3.2E-4	4.9E-5	8.3E-4	0.0	1.2E-3	8.7E-4	8.3E-4	8.4E-4
I 09	5.9	2700	4.7E-4	1.7E-5	2.1E-2	0.0	2.2E-2	2.1E-2	2.1E-2	2.1E-2
I 18	7.8	1670	6.5E-4	3.5E-5	2.8E-3	2.1E-3	5.6E-3	4.9E-3	4.9E-3	4.9E-3
J 15	7.9	1550	5.6E-5	1.2E-4	2.3E-3	1.8E-3	4.3E-3	4.3E-3	4.1E-3	4.1E-3
J 16	8.9	2570	3.8E-5	1.6E-4	5.3E-3	2.0E-3	7.4E-3	7.4E-3	7.3E-3	7.3E-3
K 18	9.8	1280	1.8E-4	0.0	2.8E-3	1.4E-2	1.7E-2	1.7E-2	1.7E-2	1.7E-2
AVERAGES										
SPREADER, NO REINJ FROM D.C.			9.4E-4	7.8E-5	4.3E-4	0.0	1.5E-3	5.0E-4	4.4E-4	4.3E-4
MASS FIRED OVERFEED			3.0E-4	8.0E-5	5.8E-3	2.9E-3	8.3E-3	8.0E-3	7.9E-3	7.9E-3
HIGH			1.8E-3	1.6E-4	2.1E-2	1.4E-2	2.2E-2	2.1E-2	2.1E-2	2.1E-2
LOW			3.8E-5	1.7E-5	6.0E-5	1.8E-3	5.6E-4	1.1E-4	3.9E-6	8.4E-6
CORRELATIONS WITH -										
FLUE GAS OXYGEN, PERCENT			-0.53	0.30	-0.38	0.36	-0.15			
TOTAL ASH			0.48	0.22	0.05	-0.63	-0.28			
GRATE HEAT RELEASE			0.71	-0.15	-0.30	-0.39	-0.43			
HYDROCARBONS			-0.04	-0.19	-0.13	-0.14	-0.20			
BOILER EFFICIENCY			-0.05	0.46	-0.32	0.09	-0.22			
CARBON MONOXIDE			0.76	-0.16	-0.24	-0.23	-0.28			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

SILVER

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS NG/J: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	3.5E-4	1.1E-3	5.7E-2	1.0E-3	6.0E-2	5.9E-2	5.9E-2	5.9E-2
B 31	6.0	2670	3.5E-4	1.2E-3	2.3E-2	1.1E-3	2.6E-2	2.5E-2	2.4E-2	2.4E-2
B 33	6.1	2130	1.3E-3	8.9E-3	2.9E-2	1.1E-3	4.0E-2	3.7E-2	3.0E-2	3.0E-2
C 44	6.9	4380	2.7E-3	1.5E-3	7.0E-2	2.9E-4	7.4E-2	7.2E-2	7.0E-2	7.0E-2
C 45	6.3	4360	1.2E-3	1.1E-3	8.9E-3	2.8E-4	1.2E-2	1.0E-2	9.2E-3	9.2E-3
C 46	9.0	3230	2.2E+0	1.6E-1	4.7E-2	3.0E-4	2.4E+0	3.6E-1	6.3E-2	5.1E-2
AVERAGE			3.6E-1	2.9E-2	3.9E-2	6.8E-4	4.3E-1	9.4E-2	4.3E-2	4.1E-2
HIGH			2.2E+0	1.6E-1	7.0E-2	1.1E-3	2.4E+0	3.6E-1	7.0E-2	7.0E-2
LOW			3.5E-4	1.1E-3	8.9E-3	2.8E-4	1.2E-2	1.0E-2	9.2E-3	9.2E-3

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS NG/J: 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	3.8E-4	9.3E-4	0.0	0.0	1.3E-3	5.2E-4	9.2E-6	2.0E-5
E 16	8.3	2760	1.1E-4	3.9E-4	5.9E-5	0.0	5.6E-4	2.8E-4	6.3E-5	6.1E-5
E 17	6.2	2770	1.8E-4	9.0E-5	7.9E-5	0.0	3.5E-4	1.3E-4	8.1E-5	8.0E-5
F 22	6.0	2980	3.0E-4	1.0E-3	3.2E-4	0.0	1.6E-3	8.5E-4	3.3E-4	3.2E-4
F 30	6.8	2890	2.2E-4	1.1E-5	1.1E-4	0.0	3.4E-4	1.2E-4	1.1E-4	1.1E-4
G 15	8.7	3230	1.5E-3	1.3E-3	6.8E-4	0.0	3.5E-3	1.4E-3	7.0E-4	6.9E-4
G 20	9.2	2320	8.2E-4	2.9E-4	2.3E-1	0.0	2.3E-1	2.3E-1	2.3E-1	2.3E-1
H 11	9.4	1980	1.6E-3	2.4E-4	1.4E-3	0.0	3.2E-3	1.6E-3	1.4E-3	1.4E-3
I 09	5.9	2700	4.7E-3	1.7E-3	6.4E-2	0.0	7.3E-2	6.5E-2	6.4E-2	6.4E-2
I 18	7.8	1670	1.6E-4	2.3E-3	1.7E-3	7.0E-4	4.8E-3	3.6E-3	2.4E-3	2.4E-3
J 15	7.9	1550	2.8E-4	1.5E-3	2.3E-3	2.4E-4	4.4E-3	4.4E-3	2.6E-3	2.6E-3
J 16	8.9	2570	2.3E-4	2.6E-3	5.3E-3	2.7E-3	1.1E-2	1.1E-2	7.9E-3	8.0E-3
K 18	9.8	1280	1.2E-4	0.0	2.8E-4	3.5E-2	3.6E-2	3.6E-2	3.6E-2	3.6E-2
AVERAGES										
SPREADER,NO REINJ FROM D.C.			5.2E-4	5.1E-4	3.8E-2	0.0	3.9E-2	3.9E-2	3.8E-2	3.8E-2
MASS FIRED OVERFEED			1.1E-3	1.3E-3	1.1E-2	5.5E-3	1.9E-2	1.7E-2	1.6E-2	1.6E-2
HIGH			4.7E-3	2.6E-3	2.3E-1	3.5E-2	2.3E-1	2.3E-1	2.3E-1	2.3E-1
LOW			1.1E-4	1.1E-5	5.9E-5	2.4E-4	3.4E-4	1.2E-4	9.2E-6	2.0E-5
CORRELATIONS WITH -										
FLUE GAS OXYGEN, PERCENT			-0.29	-0.08	0.11	0.36	0.16			
TOTAL ASH			0.22	-0.04	0.02	-0.54	-0.06			
GRATE HEAT RELEASE			-0.18	-0.37	0.13	-0.32	0.07			
HYDROCARBONS			0.16	-0.26	-0.12	-0.11	-0.14			
BOILER EFFICIENCY			-0.58	-0.11	-0.37	0.06	-0.37			
CARBON MONOXIDE			-0.11	-0.30	-0.21	-0.18	-0.24			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

CADMIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS - NG/J: 18 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210					1.8E-3			
A 35	6.0	3140					2.4E-3			
B 30	6.0	2710	7.8E-4	3.1E-4	8.6E-4	5.1E-3	7.0E-3	6.2E-3	6.0E-3	5.9E-3
B 31	6.0	2670	2.1E-3	9.2E-4	8.7E-4	5.3E-3	9.2E-3	7.0E-3	6.2E-3	6.2E-3
B 33	6.1	2130	3.3E-3	5.3E-4	8.6E-4	5.5E-3	1.0E-2	7.1E-3	6.4E-3	6.4E-3
C 44	8.9	4386	6.8E-3	1.6E-3	1.2E-3	0.0	1.0E-2	3.0E-3	1.2E-3	1.2E-3
C 45	6.3	4360	6.0E-4	1.2E-3	2.7E-4	0.0	2.1E-3	1.2E-3	2.8E-4	2.7E-4
C 46	9.0	3230	1.1E-2	1.9E-3	2.3E-3	0.0	1.5E-2	4.7E-3	2.4E-3	2.4E-3
AVERAGE			3.0E-3	8.1E-4	8.0E-4	2.8E-3	7.2E-3	4.2E-3	3.3E-3	3.3E-3
HIGH			1.1E-2	1.9E-3	2.3E-3	5.5E-3	1.5E-2	7.1E-3	6.4E-3	6.4E-3
LOW			6.0E-4	3.1E-4	2.7E-4	5.1E-3	1.8E-3	1.2E-3	2.8E-4	2.7E-4

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS - NG/J: 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	7.7E-4	1.5E-2	0.0	0.0	1.6E-2	8.2E-3	1.1E-4	2.3E-4
E 16	4.3	2760	3.3E-3	3.9E-4	5.9E-4	0.0	4.3E-3	9.1E-4	6.2E-4	6.1E-4
E 17	6.2	2770	2.7E-3	2.7E-4	1.6E-4	0.0	3.2E-3	4.0E-4	1.8E-4	1.7E-4
F 22	6.0	2950	9.1E-3	3.2E-4	1.6E-3	0.0	1.1E-2	2.1E-3	1.7E-3	1.6E-3
F 30	6.8	2890	6.7E-3	3.2E-5	1.9E-3	0.0	8.6E-3	2.1E-3	1.9E-3	1.9E-3
G 15	4.7	3230	3.7E-3	3.2E-4	6.8E-3	0.0	1.1E-2	7.1E-3	6.8E-3	6.8E-3
G 20	9.2	2320	5.1E-3	2.9E-4	2.3E-2	0.0	2.8E-2	2.3E-2	2.3E-2	2.3E-2
H 11	9.4	1980	2.6E-3	1.2E-4	2.5E-3	0.0	5.3E-3	2.6E-3	2.5E-3	2.5E-3
I 29	5.9	2700	1.2E-3	6.7E-4	1.3E-1	0.0	1.3E-1	1.3E-1	1.3E-1	1.3E-1
I 14	7.8	1670	1.6E-3	1.2E-3	1.7E-2	7.0E-3	2.6E-2	2.4E-2	2.4E-2	2.4E-2
J 15	7.9	1550	2.8E-4	9.2E-4	1.2E-2	5.9E-3	1.9E-2	1.9E-2	1.8E-2	1.8E-2
J 16	8.9	2570	1.5E-4	1.0E-3	2.1E-2	6.6E-3	2.9E-2	2.9E-2	2.8E-2	2.8E-2
K 18	9.8	1260	6.1E-4	0.0	8.4E-3	3.5E-2	4.4E-2	4.4E-2	4.4E-2	4.4E-2
AVERAGES										
SPREADER,NO REINJ FROM D.C.			5.1E-3	2.7E-4	5.6E-3	0.0	1.1E-2	6.0E-3	5.7E-3	5.7E-3
MASS FIRED OVERFEED			1.0E-3	2.7E-3	2.7E-2	7.8E-3	1.8E-2	3.6E-2	3.5E-2	3.5E-2
HIGH			9.1E-3	1.5E-2	1.3E-1	3.5E-2	1.3E-1	1.3E-1	1.3E-1	1.3E-1
LOW			1.5E-4	3.2E-5	1.6E-4	5.9E-3	3.2E-3	4.0E-4	1.1E-4	1.7E-4
CORRELATIONS WITH -										
FLUE GAS OXYGEN, PERCENT			-0.44	0.42	-0.18	0.37	-0.26			
TOTAL ASH			0.59	-0.17	0.09	-0.66	-0.07			
GRATE HEAT RELEASE			0.86	-0.54	-0.23	-0.41	-0.35			
HYDROCARBONS			0.09	-0.13	-0.15	-0.16	-0.21			
BOILER EFFICIENCY			-0.10	0.24	-0.40	0.10	-0.36			
CARBON MONOXIDE			0.77	-0.13	-0.26	-0.25	-0.29			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15918-564

INDIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS NG/J: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	7.0E-4	3.1E-4	5.7E-5	1.0E-3	2.1E-3	1.4E-3	1.1E-3	1.1E-3
B 31	6.0	2670	1.4E-3	1.5E-4	5.9E-5	1.1E-3	2.7E-3	1.4E-3	1.1E-3	1.1E-3
B 33	6.1	2130	6.5E-4	1.4E-4	2.9E-5	1.6E-1	1.6E-1	1.6E-1	1.6E-1	1.6E-1
C 44	8.9	4360	1.4E-3	3.5E-4	1.2E-5	0.0	1.7E-3	3.9E-4	2.4E-5	1.4E-5
C 45	8.3	4360	6.0E-4	2.7E-4	1.1E-5	0.0	8.7E-4	2.6E-4	1.7E-5	1.2E-5
C 46	9.0	3230	5.4E-4	2.9E-4	1.2E-5	0.0	8.4E-4	2.8E-4	1.8E-5	1.3E-5
AVERAGE			8.8E-4	2.5E-4	3.0E-5	2.6E-2	2.7E-2	2.7E-2	2.6E-2	2.6E-2
HIGH			1.4E-3	3.5E-4	5.9E-5	1.6E-1	1.6E-1	1.6E-1	1.6E-1	1.6E-1
LOW			5.4E-4	1.4E-4	1.1E-5	1.0E-3	8.4E-4	2.6E-4	1.7E-5	1.2E-5

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS NG/J: 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	1.5E-4	1.2E-3	0.0	0.0	1.3E-3	6.6E-4	9.4E-6	2.8E-5
E 16	8.3	2760	2.2E-4	7.8E-5	4.0E-5	0.0	3.4E-4	9.8E-5	4.2E-5	4.1E-5
E 17	6.2	2770	1.6E-4	5.4E-5	6.0E-4	0.0	8.3E-4	6.3E-4	6.0E-4	6.0E-4
F 22	6.0	2980	9.1E-4	1.1E-4	1.3E-3	0.0	2.3E-3	1.4E-3	1.3E-3	1.3E-3
F 30	6.8	2890	1.8E-4	2.1E-5	1.6E-4	0.0	3.6E-4	1.8E-4	1.6E-4	1.6E-4
G 15	8.7	3230	4.4E-4	3.9E-4	3.4E-4	0.0	1.2E-3	5.7E-4	3.5E-4	3.4E-4
G 20	9.2	2320	4.1E-4	2.3E-4	7.6E-4	0.0	1.4E-3	9.0E-4	7.7E-4	7.6E-4
H 11	9.4	1980	2.6E-4	2.0E-5	5.5E-4	0.0	8.4E-4	5.7E-4	5.6E-4	5.6E-4
I 09	5.9	2730	1.9E-4	2.7E-4	2.1E-2	0.0	2.2E-2	2.1E-2	2.1E-2	2.1E-2
I 18	7.8	1670	6.5E-5	5.8E-4	8.3E-4	7.0E-3	8.5E-3	8.2E-3	7.8E-3	7.8E-3
J 15	7.9	1550	7.0E-6	6.1E-4	7.0E-4	2.4E-4	1.6E-3	1.6E-3	9.4E-4	9.5E-4
J 16	8.9	2570	2.3E-6	6.5E-4	1.3E-3	2.7E-4	2.2E-3	2.2E-3	1.6E-3	1.6E-3
K 18	9.8	1280	3.0E-5	0.0	5.6E-4	2.1E-3	2.7E-3	2.7E-3	2.7E-3	2.7E-3
AVERAGES										
SPREADER, NO REINJ FROM D.C.			3.9E-4	1.5E-4	5.3E-4	0.0	1.1E-3	6.2E-4	5.3E-4	5.3E-4
MASS FIRED OVERFEED			1.0E-4	4.7E-4	3.6E-3	1.4E-3	5.5E-3	5.3E-3	5.0E-3	5.0E-3
HIGH			9.1E-4	1.2E-3	2.1E-2	7.0E-3	2.2E-2	2.1E-2	2.1E-2	2.1E-2
LOW			2.3E-6	2.0E-5	4.0E-5	2.4E-4	3.4E-4	9.0E-5	9.4E-6	2.8E-5
CORRELATIONS WITH -										
FLUE GAS OXYGEN, PERCENT			-0.32	0.38	-0.46	0.05	-0.43			
TOTAL ASH			0.56	-0.23	0.16	-0.51	0.00			
GRATE HEAT RELEASE			0.65	-0.61	-0.14	-0.29	-0.28			
HYDROCARBONS			0.19	-0.30	-0.10	-0.13	-0.15			
BOILER EFFICIENCY			-0.23	0.19	-0.35	-0.38	-0.44			
CARBON MONOXIDE			0.63	-0.37	-0.15	-0.22	-0.21			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

TIN

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - - - - NG/J* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210					8.2E-4			
A 35	6.8	3140					6.4E-4			
B 30	6.0	2710	3.5E-3	2.4E-2	8.6E-3	2.8E-3	3.8E-2	2.9E-2	1.1E-2	1.1E-2
B 31	6.0	2670	7.1E-4	1.5E-2	8.8E-3	2.1E-3	2.6E-2	2.2E-2	1.1E-2	1.1E-2
B 33	6.1	2130	3.3E-3	2.3E-2	1.4E-2	2.2E-3	4.3E-2	3.4E-2	1.7E-2	1.7E-2
C 44	8.9	4380	1.4E-2	1.1E-2	2.3E-3	0.0	2.7E-2	1.2E-2	2.5E-3	2.4E-3
C 45	8.3	4360	1.2E-2	8.8E-3	2.2E-3	0.0	2.3E-2	1.0E-2	2.4E-3	2.3E-3
C 46	9.0	3230	1.1E-2	5.3E-3	1.4E-3	0.0	1.7E-2	6.3E-3	1.5E-3	1.4E-3
AVERAGE			5.5E-3	1.1E-2	4.7E-3	8.0E-4	2.2E-2	1.4E-2	5.8E-3	5.7E-3
HIGH			1.4E-2	2.4E-2	1.4E-2	2.2E-3	4.3E-2	3.4E-2	1.7E-2	1.7E-2
LOW			7.1E-4	5.3E-3	1.4E-3	2.0E-3	6.4E-4	6.4E-4	6.4E-4	6.4E-4

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - - - - NG/J* 10.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	3.1E-3	8.8E-2	0.0	0.0	9.1E-2	4.8E-2	6.4E-4	1.4E-3
E 16	9.3	2760	3.3E-3	7.8E-3	1.8E-4	0.0	1.1E-2	4.6E-3	2.6E-4	2.2E-4
E 17	6.2	2770	2.7E-3	5.4E-3	6.0E-4	0.0	8.8E-3	3.7E-3	6.5E-4	6.3E-4
F 22	6.0	2980	1.8E-3	3.2E-3	6.3E-3	0.0	1.1E-2	8.1E-3	6.4E-3	6.4E-3
F 30	6.8	2890	1.3E-3	3.2E-3	1.6E-3	0.0	6.1E-3	3.4E-3	1.7E-3	1.6E-3
G 15	8.7	3230	5.9E-3	1.9E-2	1.4E-2	0.0	3.9E-2	2.5E-2	1.4E-2	1.4E-2
G 20	9.2	2320	3.1E-3	4.7E-3	2.3E-2	0.0	3.1E-2	2.5E-2	2.3E-2	2.3E-2
H 11	9.4	1980	1.6E-2	2.2E-3	8.3E-3	0.0	2.6E-2	1.0E-2	8.4E-3	8.6E-3
I 09	5.9	2700	7.1E-3	1.0E-2	4.2E-2	0.0	6.0E-2	4.8E-2	4.3E-2	4.3E-2
I 18	7.8	1670	2.6E-3	2.3E-2	1.9E-2	3.5E-3	4.9E-2	3.6E-2	2.3E-2	2.3E-2
J 15	7.9	1550	4.2E-4	9.2E-3	1.4E-2	1.8E-3	2.5E-2	2.5E-2	1.6E-2	1.6E-2
J 16	8.9	2570	6.1E-5	1.0E-2	1.3E-2	2.0E-3	2.5E-2	2.5E-2	1.5E-2	1.5E-2
K 18	9.8	1280	6.1E-4	0.0	2.8E-3	1.4E-2	1.7E-2	1.7E-2	1.7E-2	1.7E-2
AVERAGES										
SPREADER, NO REINJ FROM D.C.			3.0E-3	7.3E-3	7.5E-3	0.0	1.8E-2	1.2E-2	7.6E-3	7.6E-3
MASS FIRED OVERFEED			4.2E-3	2.0E-2	1.4E-2	3.1E-3	4.2E-2	3.0E-2	1.8E-2	1.8E-2
HIGH			1.6E-2	8.8E-2	4.2E-2	1.4E-2	9.1E-2	4.8E-2	4.3E-2	4.3E-2
LOW			6.1E-5	2.2E-3	1.8E-4	1.8E-3	6.1E-3	3.4E-3	2.6E-4	2.2E-4
CORRELATIONS WITH -										
FLUE GAS OXYGEN, PERCENT			0.13	0.40	-0.27	0.36	0.33			
TOTAL ASH			0.06	-0.12	0.02	-0.66	-0.20			
GRATE HEAT RELEASE			-0.02	-0.51	-0.15	-0.40	-0.64			
HYDROCARBONS			0.85	-0.19	-0.10	-0.15	-0.10			
BOILER EFFICIENCY			-0.62	0.12	-0.58	0.06	-0.27			
CARBON MONOXIDE			0.18	-0.21	-0.29	-0.24	-0.36			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

ANTIMONY

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - - - - NG/J* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210					8.5E-3			
A 35	6.8	3140					8.1E-3			
B 30	6.0	2710	3.5E-4	4.1E-3	2.4E-4	1.0E-3	5.7E-3	4.4E-3	1.3E-3	1.3E-3
B 31	6.0	2670	7.1E-4	6.1E-3	2.4E-4	1.1E-3	8.1E-3	5.9E-3	1.3E-3	1.3E-3
B 33	6.1	2130	6.5E-4	4.7E-3	2.4E-4	1.1E-3	6.7E-3	4.9E-3	1.4E-3	1.4E-3
C 44	8.9	4380	6.8E-3	8.5E-3	3.7E-4	2.9E-4	1.6E-2	7.6E-3	7.7E-4	6.9E-4
C 45	8.3	4360	6.0E-3	5.7E-3	2.0E-4	2.8E-4	1.2E-2	5.3E-3	5.6E-4	5.0E-4
C 46	9.0	3230	5.4E-3	1.8E-3	2.6E-4	3.0E-4	7.8E-3	2.4E-3	6.0E-4	5.6E-4
AVERAGE			2.5E-3	3.9E-3	1.9E-4	5.1E-4	9.1E-3	5.9E-3	2.8E-3	2.8E-3
HIGH			6.8E-3	8.5E-3	3.7E-4	1.1E-3	1.6E-2	8.5E-3	8.5E-3	8.5E-3
LOW			3.5E-4	1.8E-3	2.0E-4	2.8E-4	5.7E-3	2.4E-3	5.6E-4	5.0E-4

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - - - - NG/J* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	4.6E-3	1.5E-2	0.0	0.0	2.0E-2	8.4E-3	1.4E-4	2.9E-4
E 16	6.3	2760	3.3E-4	2.6E-3	1.1E-3	0.0	4.0E-3	2.5E-3	1.1E-3	1.1E-3
E 17	6.2	2770	9.5E-4	1.8E-3	8.1E-4	0.0	3.2E-3	1.8E-3	8.3E-4	8.2E-4
F 22	6.0	2980	2.7E-4	1.0E-3	1.4E-3	0.0	2.6E-3	1.9E-3	1.4E-3	1.4E-3
F 30	6.8	2890	2.0E-3	1.0E-3	1.2E-3	0.0	4.1E-3	1.8E-3	1.2E-3	1.2E-3
G 15	8.7	3230	3.7E-3	6.5E-3	4.9E-4	0.0	1.1E-2	4.2E-3	5.6E-4	5.3E-4
G 20	9.2	2320	5.1E-4	2.9E-3	7.6E-4	0.0	4.2E-3	2.4E-3	7.8E-4	7.7E-4
H 11	9.4	1980	1.1E-2	2.2E-3	1.2E-3	0.0	1.4E-2	2.8E-3	1.3E-3	1.4E-3
I 09	5.9	2790	2.4E-3	3.4E-2	4.5E-3	0.0	4.0E-2	2.3E-2	4.7E-3	5.3E-3
I 18	7.8	1670	1.6E-3	2.3E-3	1.4E-3	7.0E-4	6.0E-3	3.4E-3	2.1E-3	2.1E-3
J 15	7.9	1550	1.4E-4	1.5E-2	7.0E-4	5.9E-4	1.7E-2	1.7E-2	1.4E-3	1.5E-3
J 16	6.9	2570	7.6E-5	3.2E-2	1.3E-3	6.6E-4	3.4E-2	3.4E-2	2.2E-3	2.5E-3
K 18	9.8	1280	1.8E-4	0.0	1.1E-3	7.0E-3	8.3E-3	8.2E-3	8.2E-3	8.2E-3
AVERAGES										
SPREADER,NO REINJ FROM D.C.			1.2E-3	2.6E-3	1.0E-3	0.0	4.8E-3	2.4E-3	1.0E-3	1.0E-3
MASS FIRED OVERFEED			2.8E-3	1.4E-2	1.5E-3	1.3E-3	2.0E-2	1.4E-2	2.9E-3	3.0E-3
HIGH			1.1E-2	3.4E-2	4.5E-3	7.0E-3	4.0E-2	3.4E-2	8.2E-3	8.2E-3
LOW			7.6E-5	1.0E-3	4.9E-4	5.9E-4	2.6E-3	1.8E-3	1.4E-4	2.9E-4

CORRELATIONS WITH -					
FLUE GAS OXYGEN, PERCENT	0.33	-0.07	-0.55	0.36	0.02
TOTAL ASH	-0.06	0.08	0.15	-0.63	-0.02
GRATE HEAT RELEASE	-0.16	-0.48	-0.04	-0.36	-0.56
HYDROCARBONS	0.85	-0.21	0.01	-0.13	-0.02
BOILER EFFICIENCY	-0.46	0.06	-0.39	0.68	-0.08
CARBON MONOXIDE	0.25	-0.35	0.01	-0.21	-0.31

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

TELLURIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - - - - NG/J* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210					5.1E-4			
A 35	6.0	3140					6.3E-4			
B 32	6.0	2710	2.5E-3	2.6E-4	1.1E-4	2.0E-3	4.9E-3	2.6E-3	2.2E-3	2.2E-3
B 31	6.0	2670	2.5E-3	6.0E-4	1.2E-4	2.1E-3	5.3E-3	2.9E-3	2.3E-3	2.2E-3
B 33	6.1	2130	2.3E-3	9.1E-4	2.4E-4	2.2E-3	5.6E-3	3.3E-3	2.5E-3	2.5E-3
C 44	6.9	4380	2.0E-3	4.2E-4	4.7E-5	5.9E-4	3.1E-3	1.1E-3	6.5E-4	6.4E-4
C 45	6.3	4360	1.8E-3	3.1E-4	4.5E-5	2.8E-3	5.0E-3	3.3E-3	2.9E-3	2.9E-3
C 46	9.0	3230	1.6E-3	1.7E-4	4.7E-5	5.9E-4	2.4E-3	9.1E-4	6.5E-4	6.4E-4
AVERAGE			1.6E-3	3.3E-4	7.6E-5	1.3E-3	3.4E-3	1.9E-3	1.5E-3	1.5E-3
HIGH			2.5E-3	9.1E-4	2.4E-4	2.8E-3	5.6E-3	3.3E-3	2.9E-3	2.9E-3
LOW			1.6E-3	1.7E-4	4.5E-5	5.9E-4	5.1E-4	5.1E-4	5.1E-4	5.1E-4

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - - - - NG/J* 10.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	13.2	2870	2.3E-4	1.6E-4	0.0	0.0	3.9E-4	1.0E-4	2.7E-6	5.9E-6
E 16	6.3	2760	6.6E-4	7.8E-5	1.8E-5	0.0	7.5E-4	8.2E-5	2.3E-5	2.1E-5
E 17	6.2	2770	5.5E-4	5.4E-5	6.0E-5	0.0	6.6E-4	1.1E-4	6.4E-5	6.2E-5
F 22	6.0	2990	1.8E-3	6.4E-5	2.5E-4	0.0	2.1E-3	3.5E-4	2.7E-4	2.6E-4
F 33	6.8	2890	1.3E-3	6.4E-5	1.6E-4	0.0	1.6E-3	2.4E-4	1.7E-4	1.7E-4
G 15	8.7	3230	2.9E-3	2.6E-4	2.4E-3	0.0	5.6E-3	2.6E-3	2.4E-3	2.4E-3
G 20	9.2	2320	4.1E-4	2.3E-4	3.8E-3	0.0	4.4E-3	3.9E-3	3.8E-3	3.8E-3
H 11	9.4	1980	3.2E-4	1.5E-5	5.5E-4	0.0	8.9E-4	5.7E-4	5.6E-4	5.6E-4
I 09	5.9	2780	9.4E-4	1.3E-4	4.2E-2	0.0	4.4E-2	4.3E-2	4.2E-2	4.2E-2
I 10	7.8	1670	1.6E-4	2.3E-4	5.6E-3	3.5E-3	9.5E-3	9.2E-3	9.1E-3	9.1E-3
J 15	7.9	1550	2.8E-5	1.5E-4	4.7E-3	1.8E-3	6.6E-3	6.6E-3	6.4E-3	6.4E-3
J 16	8.9	2570	3.8E-5	1.3E-4	7.9E-3	2.8E-3	1.0E-2	1.0E-2	1.0E-2	1.0E-2
K 18	9.8	1240	1.8E-4	0.0	2.8E-3	1.4E-2	1.7E-2	1.7E-2	1.7E-2	1.7E-2
AVERAGES										
SPREADER,NO REINJ FROM D.C.			1.3E-3	1.3E-4	1.1E-3	0.0	2.5E-3	1.2E-3	1.1E-3	1.1E-3
MASS FIRED OVERFEED			2.7E-4	1.2E-4	9.1E-3	3.1E-3	1.3E-2	1.2E-2	1.2E-2	1.2E-2
HIGH			2.9E-3	2.6E-4	4.2E-2	1.4E-2	4.4E-2	4.3E-2	4.2E-2	4.2E-2
LOW			2.8E-5	1.5E-5	1.8E-5	1.8E-3	3.9E-4	8.2E-5	2.7E-6	5.9E-6
CORRELATIONS WITH -										
FLUE GAS OXYGEN, PERCENT			-0.33	0.13	-0.39	0.36	-0.28			
TOTAL ASH			0.74	0.11	0.09	-0.66	-0.08			
GRATE HEAT RELEASE			0.71	-0.02	-0.26	-0.40	-0.34			
HYDROCARBONS			-0.59	-0.42	-0.15	-0.15	-0.21			
BOILER EFFICIENCY			-0.32	-0.37	-0.16	0.06	-0.36			
CARBON MONOXIDE			0.35	-0.45	-0.26	-0.24	-0.31			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

IODINE

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS NG/J 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	7.0E-4	7.4E-5	5.7E-5	5.1E-4	1.3E-3	6.8E-4	5.7E-4	5.7E-4
B 31	6.0	2670	7.1E-4	1.8E-4	5.9E-5	5.3E-4	1.5E-3	7.9E-4	5.9E-4	5.9E-4
B 33	6.1	2130	3.3E-4	5.6E-5	5.9E-5	5.5E-4	1.0E-3	6.8E-4	6.2E-4	6.1E-4
C 44	8.9	4380	4.1E-4	3.4E-5	4.7E-5	2.9E-4	7.6E-4	4.0E-4	3.4E-4	3.4E-4
C 45	8.3	4360	3.6E-4	4.1E-5	4.5E-5	2.8E-4	7.3E-4	3.9E-4	3.3E-4	3.3E-4
C 46	9.0	3230	1.1E-3	2.2E-5	2.3E-5	3.0E-4	1.4E-3	4.3E-4	3.3E-4	3.2E-4
AVERAGE			6.0E-4	6.8E-5	4.8E-5	4.1E-4	1.1E-3	5.6E-4	4.6E-4	4.6E-4
HIGH			1.1E-3	1.8E-4	5.9E-5	5.5E-4	1.5E-3	7.9E-4	6.2E-4	6.1E-4
LOW			3.3E-4	2.2E-5	2.3E-5	2.8E-4	7.3E-4	3.9E-4	3.3E-4	3.2E-4

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS NG/J 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	1.5E-4	7.2E-5	0.0	0.0	2.3E-4	4.5E-5	1.6E-6	3.4E-6
E 16	8.3	2760	2.2E-3	2.6E-4	0.0	0.0	2.5E-3	2.1E-4	1.7E-5	1.0E-5
E 17	5.2	2770	1.8E-3	1.8E-4	4.0E-5	0.0	2.0E-3	2.0E-4	5.4E-5	4.6E-5
F 22	6.0	2980	6.1E-3	2.1E-4	1.9E-4	0.0	6.5E-3	5.0E-4	2.1E-4	2.2E-4
F 30	6.8	2890	4.5E-3	2.1E-4	2.7E-4	0.0	4.9E-3	5.3E-4	3.0E-4	2.9E-4
G 15	8.7	3230	1.5E-3	6.5E-7	1.0E-3	0.0	2.5E-3	1.1E-3	1.0E-3	1.0E-3
G 20	9.2	2320	2.1E-3	5.9E-7	1.1E-3	0.0	3.2E-3	1.2E-3	1.2E-3	1.1E-3
H 11	9.4	1980	5.3E-6	4.9E-5	2.8E-4	0.0	3.3E-4	3.0E-4	2.8E-4	2.8E-4
I 09	5.9	2700	0.0	6.7E-5	0.0	0.0	6.7E-5	3.7E-5	4.7E-7	1.0E-6
I 10	7.8	1670	1.0E-3	1.7E-4	2.6E-3	1.8E-3	5.7E-3	4.7E-3	4.5E-3	4.5E-3
J 15	7.9	1550	2.8E-5	6.1E-5	2.3E-3	1.8E-3	4.2E-3	4.2E-3	4.1E-3	4.1E-3
J 16	8.9	2570	1.5E-5	6.5E-5	5.3E-3	2.0E-3	7.3E-3	7.3E-3	7.2E-3	7.2E-3
K 18	9.8	1280	9.1E-5	0.0	1.1E-3	7.0E-3	8.3E-3	8.2E-3	8.2E-3	8.2E-3
AVERAGES										
SPREADER, NO REINJ FROM D.C.			3.0E-3	1.4E-4	4.4E-4	0.0	3.6E-3	6.2E-4	4.7E-4	4.6E-4
MASS FIRED OVERFEED			1.8E-4	7.0E-5	1.7E-3	1.8E-3	3.7E-3	3.5E-3	3.5E-3	3.5E-3
HIGH			6.1E-3	2.6E-4	5.3E-3	7.0E-3	8.3E-3	8.2E-3	8.2E-3	8.2E-3
LOW			9.3E-6	9.9E-7	4.0E-5	1.8E-3	6.7E-5	3.7E-5	4.7E-7	1.0E-6
CORRELATIONS WITH -										
FLUE GAS OXYGEN, PERCENT			-0.93	-0.58	0.24	0.37	0.01			
TOTAL ASH			0.57	0.36	-0.27	-0.68	-0.24			
GRATE HEAT RELEASE			0.82	0.40	-0.31	-0.45	0.08			
HYDROCARBONS			-0.11	-0.12	-0.20	-0.17	-0.32			
BOILER EFFICIENCY			0.12	0.33	0.11	0.14	0.26			
CARBON MONOXIDE			0.74	0.41	-0.33	-0.24	0.14			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

CESIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS NG/J 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	2.9E-3	2.6E-3	2.9E-4	5.1E-3	1.0E-2	7.5E-3	5.4E-3	5.4E-3
B 31	6.0	2670	3.5E-3	5.4E-3	2.0E-4	5.3E-3	1.4E-2	1.0E-2	5.5E-3	5.5E-3
B 33	6.1	2130	2.3E-3	7.4E-3	2.9E-4	5.5E-3	1.6E-2	1.2E-2	5.9E-3	5.9E-3
C 44	8.9	4380	1.4E-1	3.3E-3	2.3E-5	0.0	1.4E-1	1.4E-2	1.0E-3	2.3E-4
C 45	8.3	4360	1.2E-1	2.6E-3	2.2E-5	0.0	1.2E-1	1.2E-2	8.8E-4	2.1E-4
C 46	9.0	3230	5.4E-2	3.3E-3	4.7E-6	0.0	5.7E-2	7.2E-3	4.1E-4	9.8E-5
AVERAGE			5.3E-2	4.1E-3	1.4E-4	2.7E-3	6.0E-2	1.1E-2	3.2E-3	2.9E-3
HIGH			1.4E-1	7.4E-3	2.9E-4	5.5E-3	1.4E-1	1.4E-2	5.9E-3	5.9E-3
LOW			2.3E-3	2.6E-3	4.7E-6	5.1E-3	1.0E-2	7.2E-3	4.1E-4	9.8E-5

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS NG/J 10.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	2.3E-3	6.2E-4	0.0	0.0	2.9E-3	4.2E-4	2.8E-5	4.4E-5
E 16	6.3	2760	3.3E-3	1.3E-3	4.8E-6	0.0	4.6E-3	8.3E-4	3.6E-5	2.2E-5
E 17	6.2	2770	9.1E-4	3.6E-3	7.9E-6	0.0	4.5E-3	2.8E-3	4.0E-5	2.6E-5
F 22	6.0	2980	1.2E-3	1.1E-4	1.3E-5	0.0	1.3E-3	1.1E-4	2.2E-5	1.8E-5
F 30	6.8	2830	3.1E-3	4.2E-5	1.6E-5	0.0	3.2E-3	1.4E-4	3.8E-5	2.9E-5
G 15	6.7	3230	5.9E-3	1.3E-3	6.8E-5	0.0	7.3E-3	1.8E-3	1.2E-4	1.0E-4
G 20	9.2	2320	4.1E-3	2.3E-4	2.3E-5	0.0	4.4E-3	2.8E-4	5.4E-5	4.1E-5
H 11	9.4	1980	2.1E-3	1.7E-3	5.5E-5	0.0	3.9E-3	1.1E-3	8.2E-5	1.1E-4
I 09	5.9	2700	1.9E-3	2.7E-3	1.7E-3	0.0	6.3E-3	3.2E-3	1.7E-3	1.8E-3
I 18	7.8	1670	1.3E-3	2.9E-3	2.8E-4	2.8E-4	4.8E-3	2.2E-3	5.9E-4	6.2E-4
J 15	7.9	1550	1.1E-4	2.5E-3	2.1E-4	2.4E-4	3.0E-3	3.0E-3	4.6E-4	4.8E-4
J 16	8.9	2570	3.1E-4	2.6E-3	2.4E-4	2.7E-4	3.4E-3	3.4E-3	5.2E-4	5.5E-4
K 18	9.8	1260	3.0E-5	0.0	2.8E-4	2.1E-3	2.3E-3	2.3E-3	2.3E-3	2.3E-3
AVERAGES										
SPREADER,NO REINJ FROM D.C.			3.1E-3	1.1E-3	2.2E-5	0.0	4.2E-3	7.3E-4	5.1E-5	3.9E-5
MASS FIRED OVERFEED			1.2E-3	1.9E-3	3.8E-4	4.1E-4	3.8E-3	2.2E-3	8.2E-4	8.4E-4
HIGH			5.9E-3	3.6E-3	1.7E-3	2.1E-3	7.3E-3	3.4E-3	2.3E-3	2.3E-3
LOW			3.0E-5	4.2E-5	4.8E-6	2.4E-4	1.3E-3	1.1E-4	2.0E-5	1.8E-5
CORRELATIONS WITH -										
FLUE GAS OXYGEN, PERCENT			0.14	-0.33	-0.48	0.36	-0.09			
TOTAL ASH			0.57	-0.03	0.03	-0.62	0.37			
GRATE HEAT RELEASE			0.49	-0.23	-0.29	-0.34	0.12			
HYDROCARBONS			0.08	-0.01	-0.13	-0.14	-0.18			
BOILER EFFICIENCY			-0.53	0.04	-0.35	0.09	-0.61			
CARBON MONOXIDE			0.01	-0.47	-0.24	-0.22	-0.52			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

BARIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J BARIUM	*- - - EMISSIONS - - - - NG/J* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210	0.0					1.4E-1			
A 35	6.0	3140	0.0					1.7E-1			
B 30	6.0	2710	0.0	2.1E-1	1.1E-1	8.6E-4	2.0E-3	3.3E-1	1.1E-1	5.1E-3	3.4E-3
B 31	6.0	2670	0.0	3.5E-1	2.6E-1	8.7E-4	2.1E-3	6.1E-1	2.3E-1	7.3E-3	3.9E-3
B 33	6.1	2130	0.0	6.5E-1	3.4E-1	8.6E-4	2.2E-3	1.0E+0	3.2E-1	1.0E-2	4.6E-3
C 44	8.9	4380	0.0	1.4E+2	7.4E-1	4.7E-3	0.0	1.4E+2	1.2E+1	1.0E+0	2.1E-1
C 45	8.3	4360	0.0	6.0E+1	6.0E-1	2.2E-3	0.0	6.0E+1	5.7E+0	4.2E-1	9.3E-2
C 46	9.0	3230	0.0	5.4E+0	3.9E-1	1.4E-3	0.0	5.8E+0	7.7E-1	4.2E-2	1.0E-2
AVERAGE				2.5E+1	3.1E-1	1.4E-3	8.0E-4	2.6E+1	2.5E+0	2.2E-1	7.9E-2
HIGH				1.4E+2	7.4E-1	4.7E-3	2.2E-3	1.4E+2	1.2E+1	1.0E+0	2.1E-1
LOW				2.1E-1	1.1E-1	8.6E-4	2.0E-3	1.4E-1	1.1E-1	5.1E-3	3.4E-3

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J BARIUM	*- - - EMISSIONS - - - - NG/J* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	4.3	1.5E-2	4.1E-2	0.0	0.0	5.7E-2	2.3E-2	4.0E-4	8.5E-4
E 16	8.3	2760	2.7	2.2E-1	1.3E-1	2.0E-3	0.0	3.5E-1	8.1E-2	4.4E-3	3.4E-3
E 17	6.2	2770	3.5	1.8E-1	3.6E-1	2.0E-5	0.0	5.4E-1	2.0E-1	3.8E-3	2.2E-3
F 22	6.0	2980	2.4	3.0E-1	1.1E-2	6.3E-3	0.0	3.2E-1	2.2E-2	8.5E-3	7.6E-3
F 30	6.8	2890	4.4	4.5E-1	1.1E-2	2.7E-3	0.0	4.6E-1	2.3E-2	5.9E-3	4.5E-3
G 15	8.7	3230	6.6	7.4E-1	6.5E-2	3.4E-3	0.0	8.0E-1	6.3E-2	9.0E-3	6.6E-3
G 20	9.2	2320	2.5	2.1E-1	4.7E-2	7.6E-3	0.0	2.6E-1	4.0E-2	9.4E-3	8.6E-3
H 11	9.4	1980	1.2	2.1E-1	4.9E-3	8.3E-3	0.0	2.2E-1	1.8E-2	1.0E-2	1.2E-2
I 09	5.9	2700	1.0	1.4E-1	6.7E-3	2.1E-2	0.0	1.7E-1	2.9E-2	2.2E-2	2.3E-2
I 18	7.8	1670	5.4	2.0E+0	2.3E-2	1.1E-2	2.8E-3	2.0E+0	8.9E-2	2.8E-2	4.4E-2
J 15	7.9	1550	4.2	8.4E-2	6.1E-1	1.4E-2	2.4E-3	7.1E-1	7.1E-1	2.1E-2	2.7E-2
J 16	8.9	2570	1.8	4.6E-2	1.9E-2	2.4E-2	2.7E-3	9.2E-2	9.2E-2	2.7E-2	2.7E-2
K 18	9.8	1280	0.0	3.0E-2	0.0	1.4E-3	7.0E-3	3.9E-2	9.4E-3	8.7E-3	8.9E-3
AVERAGES											
SPREADER, NO REINJ FROM D.C.				3.5E-1	1.0E-1	3.7E-3	0.0	4.6E-1	7.2E-2	6.8E-3	5.5E-3
MASS FIRED OVERFEED				3.6E-1	1.0E-1	1.1E-2	2.1E-3	4.7E-1	1.4E-1	1.7E-2	2.0E-2
HIGH				2.0E+0	6.1E-1	2.4E-2	7.0E-3	2.0E+0	7.1E-1	2.8E-2	4.4E-2
LOW				1.5E-2	4.9E-3	2.0E-5	2.4E-3	3.9E-2	9.4E-3	4.0E-4	8.5E-4
CORRELATIONS WITH -											
FLUE GAS OXYGEN, PERCENT				-0.14	-0.19	-0.18	0.35	-0.21			
TOTAL ASH				-0.08	-0.20	-0.06	-0.72	-0.15			
ASH BARIUM				0.57	0.25	-0.26	-0.34	0.65			
GRATE HEAT RELEASE				0.11	-0.02	-0.31	-0.49	0.09			
HYDROCARBONS				-0.08	-0.19	0.00	-0.19	-0.15			
BOILER EFFICIENCY				-0.48	0.60	-0.16	0.14	-0.27			
CARBON MONOXIDE				-0.04	-0.29	-0.18	-0.31	-0.15			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

LANTHANUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS NG/J 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	7.0E-3	1.1E-3	2.9E-5	1.0E-3	9.2E-3	2.5E-3	1.1E-3	1.1E-3
B 31	6.0	2670	1.8E-2	5.9E-3	3.0E-5	1.1E-3	2.5E-2	7.0E-3	1.3E-3	1.1E-3
B 33	6.1	2130	3.3E-2	1.0E-2	2.9E-5	1.1E-3	4.4E-2	1.2E-2	1.4E-3	1.2E-3
C 44	8.9	4380	3.4E-1	7.7E-3	1.2E-5	0.0	3.5E-1	3.6E-2	2.4E-3	5.3E-4
C 45	8.3	4360	3.0E-1	6.9E-3	1.1E-5	0.0	3.0E-1	3.1E-2	2.1E-3	4.7E-4
C 46	9.0	3230	1.6E-1	7.8E-3	9.4E-6	0.0	1.7E-1	2.0E-2	1.2E-3	2.6E-4
AVERAGE			1.4E-1	6.6E-3	2.0E-5	5.3E-4	1.5E-1	1.8E-2	1.6E-3	7.7E-4
HIGH			3.4E-1	1.0E-2	3.0E-5	1.1E-3	3.5E-1	3.6E-2	2.4E-3	1.2E-3
LOW			7.0E-3	1.1E-3	9.4E-6	1.0E-3	9.2E-3	2.5E-3	1.1E-3	2.6E-4

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS NG/J 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	13.2	2070	7.7E-4	1.7E-3	0.0	0.0	2.5E-3	1.0E-3	1.7E-5	3.7E-5
E 16	8.3	2760	3.3E-2	1.2E-2	2.0E-5	0.0	4.5E-2	7.5E-3	3.3E-4	2.0E-4
E 17	6.2	2770	8.2E-3	9.0E-3	1.6E-5	0.0	1.7E-2	5.3E-3	1.4E-4	8.5E-5
F 22	6.6	2980	2.7E-2	6.4E-4	1.0E-4	0.0	2.8E-2	1.3E-3	2.9E-4	2.1E-4
F 30	6.8	2890	2.0E-2	1.0E-3	1.1E-4	0.0	2.1E-2	1.3E-3	2.6E-4	1.9E-4
G 15	8.7	3230	5.9E-2	5.2E-3	6.8E-5	0.0	6.4E-2	4.8E-3	5.2E-4	3.2E-4
G 20	9.2	2320	3.1E-2	5.3E-3	7.6E-4	0.0	3.7E-2	4.7E-3	1.0E-3	9.0E-4
H 11	9.4	1980	1.6E-2	7.3E-4	1.4E-4	0.0	1.7E-2	1.0E-3	2.5E-4	3.9E-4
I 09	5.9	2700	1.9E-2	6.7E-4	4.2E-3	0.0	2.4E-2	5.2E-3	4.4E-3	4.5E-3
I 18	7.8	1670	2.6E-2	5.8E-4	5.6E-4	7.0E-4	2.8E-2	2.4E-3	1.4E-3	1.7E-3
J 15	7.9	1550	2.8E-3	2.5E-3	4.7E-4	1.5E-3	7.2E-3	7.2E-3	2.0E-3	2.0E-3
J 16	8.9	2570	1.5E-3	1.0E-3	7.9E-4	6.6E-4	4.0E-3	4.0E-3	1.5E-3	1.5E-3
K 18	9.8	1280	3.0E-3	0.0	8.4E-4	7.0E-3	1.1E-2	8.0E-3	7.9E-3	7.9E-3
AVERAGES										
SPREADER,NO REINJ FROM D.C.			3.0E-2	5.5E-3	1.8E-4	0.0	3.5E-2	4.1E-3	4.2E-4	3.2E-4
MASS FIRED OVERFEED			1.0E-2	1.0E-3	1.0E-3	1.4E-3	1.3E-2	4.1E-3	2.5E-3	2.6E-3
HIGH			5.9E-2	1.2E-2	4.2E-3	7.0E-3	6.4E-2	8.0E-3	7.9E-3	7.9E-3
LOW			7.7E-4	5.8E-4	1.6E-5	6.6E-4	2.5E-3	1.0E-3	1.7E-5	3.7E-5
CORRELATIONS WITH -										
FLUE GAS OXYGEN, PERCENT			-0.14	-0.07	-0.34	0.36	-0.13			
TOTAL ASH			0.57	0.39	0.00	-0.65	0.55			
GRATE HEAT RELEASE			0.63	0.35	-0.28	-0.39	0.61			
HYDROCARBONS			-0.04	-0.23	-0.16	-0.14	-0.11			
BOILER EFFICIENCY			-0.62	0.17	-0.37	0.14	-0.57			
CARBON MONOXIDE			0.08	-0.35	-0.26	-0.23	-0.04			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

CERIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - EMISSIONS - - - - NG/J* 10 UM + 3 UM CYCLONE	1 UM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	1.8E-2	7.5E-3	5.7E-5	1.0E-3	2.6E-2	8.3E-3	1.3E-3	1.1E-3
B 31	6.0	2670	2.5E-2	1.3E-2	5.9E-5	1.1E-3	3.9E-2	1.3E-2	1.4E-3	1.2E-3
B 33	6.1	2130	3.3E-2	1.7E-2	5.9E-5	1.1E-3	5.1E-2	1.7E-2	1.5E-3	1.2E-3
C 44	8.9	4380	4.7E-1	1.4E-2	4.7E-5	0.0	4.9E-1	5.2E-2	3.5E-3	7.8E-4
C 45	8.3	4360	4.2E-1	6.0E-3	2.2E-5	0.0	4.2E-1	4.1E-2	3.0E-3	6.6E-4
C 46	9.0	3230	3.8E-1	8.1E-3	2.3E-5	0.0	3.9E-1	3.9E-2	2.7E-3	6.0E-4
AVERAGE			2.2E-1	1.1E-2	4.5E-5	5.3E-4	2.4E-1	2.9E-2	2.2E-3	9.3E-4
HIGH			4.7E-1	1.7E-2	5.9E-5	1.1E-3	4.9E-1	5.2E-2	3.5E-3	1.2E-3
LOW			1.8E-2	6.0E-3	2.2E-5	1.0E-3	2.6E-2	8.3E-3	1.3E-3	6.0E-4

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - EMISSIONS - - - - NG/J* 18.5 UM +5.9 UM CYCLONE	1.4 UM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	5.4E-3	1.7E-3	0.0	0.0	7.1E-3	1.1E-3	5.0E-5	1.1E-4
E 16	6.3	2760	3.3E-2	1.3E-2	1.4E-5	0.0	4.6E-2	8.3E-3	3.4E-4	2.0E-4
E 17	6.2	2770	2.7E-2	5.4E-2	7.9E-6	0.0	8.2E-2	3.1E-2	5.8E-4	3.3E-4
F 22	6.0	2980	9.1E-2	1.1E-3	3.2E-5	0.0	9.2E-2	3.5E-3	6.8E-4	4.0E-4
F 30	6.8	2890	2.2E-2	1.1E-3	5.4E-5	0.0	2.3E-2	1.3E-3	2.2E-4	1.5E-4
G 15	8.7	3230	1.5E-1	1.3E-2	6.8E-5	0.0	1.6E-1	1.2E-2	1.2E-3	7.1E-4
G 20	9.2	2320	8.2E-2	1.2E-2	3.9E-5	0.0	9.4E-2	9.1E-3	7.0E-4	4.1E-4
H 11	9.4	1980	4.8E-2	1.5E-3	5.5E-5	0.0	4.9E-2	2.4E-3	4.0E-4	7.9E-4
I 09	5.9	2700	7.1E-2	6.7E-3	1.1E-3	0.0	7.8E-2	7.0E-3	1.6E-3	2.2E-3
I 18	7.8	1670	2.6E-1	2.3E-3	5.6E-4	2.8E-4	2.6E-1	1.0E-2	2.7E-3	4.8E-3
J 15	7.9	1550	1.1E-2	6.1E-3	1.9E-4	2.4E-4	1.9E-2	1.8E-2	5.4E-4	6.8E-4
J 16	8.9	2570	6.1E-3	2.6E-3	7.9E-4	2.7E-4	1.0E-2	1.0E-2	1.1E-3	1.2E-3
K 18	9.8	1280	6.1E-3	0.0	5.6E-4	2.1E-3	8.8E-3	2.9E-3	2.7E-3	2.8E-3
AVERAGES										
SPREADER, NO REINJ FROM D.C.			6.7E-2	1.6E-2	3.6E-5	0.0	8.3E-2	1.1E-2	6.2E-4	3.7E-4
MASS FIRED OVERFEED			5.8E-2	3.0E-3	4.6E-4	4.1E-4	6.2E-2	7.3E-3	1.3E-3	1.8E-3
HIGH			2.6E-1	5.4E-2	1.1E-3	2.1E-3	2.6E-1	3.1E-2	2.7E-3	4.8E-3
LOW			5.4E-3	1.1E-3	7.9E-6	2.4E-4	7.1E-3	1.1E-3	5.0E-5	1.1E-4
CORRELATIONS WITH -										
FLUE GAS OXYGEN, PERCENT			-0.17	-0.36	-0.14	0.36	-0.24			
TOTAL ASH			0.04	0.32	-0.21	-0.62	0.10			
GRATE HEAT RELEASE			0.17	0.33	-0.48	-0.38	0.24			
HYDROCARBONS			-0.05	-0.19	-0.21	-0.14	-0.09			
BOILER EFFICIENCY			-0.67	0.23	-0.25	0.09	-0.62			
CARBON MONOXIDE			-0.05	-0.31	-0.36	-0.22	-0.11			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

PRASEODYMIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - EMISSIONS - - - - NG/J* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	7.0E-4	5.6E-4	5.7E-5	1.0E-3	2.3E-3	1.6E-3	1.1E-3	1.1E-3
B 31	6.0	2670	7.1E-3	9.4E-4	5.9E-5	1.1E-3	9.1E-3	2.4E-3	1.2E-3	1.1E-3
B 33	6.1	2130	6.5E-3	2.5E-3	5.9E-5	1.1E-3	1.0E-2	3.6E-3	1.2E-3	1.2E-3
C 44	8.9	4380	4.7E-2	1.5E-3	1.6E-5	0.0	4.9E-2	5.3E-3	3.6E-4	9.0E-5
C 45	8.3	4360	4.2E-2	1.2E-3	1.6E-5	0.0	4.3E-2	4.6E-3	3.2E-4	8.8E-5
C 46	9.0	3230	2.7E-2	1.6E-3	1.2E-5	0.0	2.9E-2	3.6E-3	2.1E-4	5.5E-5
AVERAGE			2.2E-2	1.4E-3	3.7E-5	5.3E-4	2.4E-2	3.5E-3	7.3E-4	6.0E-4
HIGH			4.7E-2	2.5E-3	5.9E-5	1.1E-3	4.9E-2	5.3E-3	1.2E-3	1.2E-3
LOW			7.0E-4	5.6E-4	1.2E-5	1.0E-3	2.3E-3	1.6E-3	2.1E-4	5.5E-5

STOKERS WITHOUT REINJECTION FROM CUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - EMISSIONS - - - - NG/J* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	3.1E-3	6.2E-4	0.0	0.0	3.7E-3	4.4E-4	2.6E-5	5.5E-5
E 16	8.3	2760	1.0E-2	7.8E-3	4.0E-5	0.0	1.8E-2	4.7E-3	1.6E-4	1.1E-4
E 17	6.2	2770	2.7E-3	5.4E-3	4.0E-5	0.0	8.2E-3	3.1E-3	1.0E-4	7.2E-5
F 22	6.0	2980	1.8E-2	3.2E-4	1.3E-4	0.0	1.9E-2	8.8E-4	2.6E-4	2.0E-4
F 33	6.8	2890	6.7E-3	3.2E-4	8.1E-5	0.0	7.1E-3	4.7E-4	1.3E-4	1.1E-4
G 15	8.7	3230	1.5E-2	1.3E-3	6.8E-5	0.0	1.6E-2	1.3E-3	1.8E-4	1.3E-4
G 20	9.2	2320	2.1E-2	1.2E-3	3.8E-4	0.0	2.2E-2	1.7E-3	5.3E-4	4.7E-4
H 11	9.4	1980	5.3E-3	2.2E-4	2.2E-4	0.0	5.7E-3	5.1E-4	2.6E-4	3.0E-4
I 09	5.9	2700	4.7E-3	2.7E-4	4.2E-3	0.0	9.2E-3	4.5E-3	4.3E-3	4.3E-3
I 18	7.8	1670	1.6E-2	2.3E-4	5.6E-4	7.0E-4	1.8E-2	1.9E-3	1.4E-3	1.5E-3
J 15	7.9	1550	1.1E-3	6.1E-4	4.7E-4	5.9E-4	2.8E-3	2.8E-3	1.1E-3	1.1E-3
J 16	8.9	2570	1.5E-3	2.6E-4	7.9E-4	6.6E-4	3.2E-3	3.2E-3	1.5E-3	1.5E-3
K 18	9.8	1280	6.1E-4	0.0	8.4E-4	7.0E-3	8.5E-3	7.9E-3	7.9E-3	7.9E-3
AVERAGES										
SPREADER,NO REINJ FROM D.C.			1.2E-2	2.7E-3	1.2E-4	0.0	1.5E-2	2.0E-3	2.3E-4	1.8E-4
MASS FIRED OVERFEED			4.7E-3	3.2E-4	1.0E-3	1.3E-3	7.3E-3	3.0E-3	2.3E-3	2.4E-3
HIGH			2.1E-2	7.8E-3	4.2E-3	7.0E-3	2.2E-2	7.9E-3	7.9E-3	7.9E-3
LOW			6.1E-4	2.2E-4	4.0E-5	5.9E-4	2.8E-3	4.4E-4	2.6E-5	5.5E-5
CORRELATIONS WITH -										
FLUE GAS OXYGEN, PERCENT			-0.14	-0.15	-0.36	0.36	-0.15			
TOTAL ASH			0.34	0.34	0.00	-0.68	0.30			
GRATE HEAT RELEASE			0.55	0.26	-0.30	-0.36	0.51			
HYDROCARBONS			-0.06	-0.18	-0.13	-0.13	-0.19			
BOILER EFFICIENCY			-0.54	0.27	-0.35	0.08	-0.50			
CARBON MONOXIDE			0.24	-0.27	-0.24	-0.21	0.05			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

NEODYMIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS NG/J: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	3.5E-3	2.3E-3	1.1E-4	2.0E-3	7.9E-3	4.1E-3	2.2E-3	2.2E-3
B 31	6.0	2670	2.1E-2	4.9E-3	1.2E-4	2.1E-3	2.8E-2	7.7E-3	2.4E-3	2.3E-3
B 33	6.1	2130	2.0E-2	9.2E-3	1.2E-4	2.2E-3	3.1E-2	1.1E-2	2.5E-3	2.4E-3
C 44	8.9	4380	2.7E-1	4.7E-3	4.7E-5	0.0	2.8E-1	2.7E-2	2.0E-3	4.6E-4
C 45	8.3	4360	6.0E-2	3.7E-3	4.5E-5	0.0	6.3E-2	8.1E-3	4.9E-4	1.4E-4
C 46	9.0	3230	1.1E-1	5.1E-3	4.7E-5	0.0	1.1E-1	1.3E-2	8.4E-4	2.2E-4
AVERAGE			8.0E-2	5.0E-3	8.1E-5	1.1E-3	8.6E-2	1.2E-2	1.7E-3	1.3E-3
HIGH			2.7E-1	9.2E-3	1.2E-4	2.2E-3	2.8E-1	2.7E-2	2.5E-3	2.4E-3
LOW			3.5E-3	2.3E-3	4.5E-5	2.0E-3	7.9E-3	4.1E-3	4.9E-4	1.4E-4

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS NG/J: 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	7.7E-4	4.7E-3	0.0	0.0	5.5E-3	2.6E-3	3.9E-5	8.3E-5
E 16	8.3	2760	6.6E-2	1.3E-2	1.0E-4	0.0	7.9E-2	9.4E-3	6.5E-4	4.1E-4
E 17	6.2	2770	9.1E-3	2.7E-2	6.0E-5	0.0	3.6E-2	1.5E-2	3.1E-4	2.0E-4
F 22	6.0	2980	3.0E-2	1.1E-3	2.5E-4	0.0	3.2E-2	1.8E-3	4.7E-4	3.8E-4
F 30	6.8	2890	2.2E-2	1.1E-3	1.6E-4	0.0	2.3E-2	1.5E-3	3.3E-4	2.6E-4
G 15	8.7	3230	3.7E-2	1.9E-3	6.8E-4	0.0	3.9E-2	2.9E-3	1.0E-3	8.4E-4
G 20	9.2	2320	2.1E-2	4.7E-3	7.6E-4	0.0	2.6E-2	4.0E-3	9.4E-4	8.6E-4
H 11	9.4	1960	4.8E-2	2.2E-3	8.3E-4	0.0	5.1E-2	3.6E-3	1.2E-3	1.6E-3
I 09	5.9	2700	1.9E-2	1.7E-3	4.2E-2	0.0	6.3E-2	4.4E-2	4.3E-2	4.3E-2
I 16	7.6	1670	6.5E-2	1.2E-3	2.8E-3	2.1E-3	7.1E-2	7.6E-3	5.3E-3	5.9E-3
J 15	7.9	1550	2.8E-3	1.5E-3	1.4E-3	1.8E-3	7.5E-3	7.5E-3	3.2E-3	3.2E-3
J 16	8.9	2570	2.3E-3	1.0E-3	5.3E-3	2.0E-3	1.1E-2	1.1E-2	7.3E-3	7.3E-3
K 18	9.8	1280	3.0E-3	0.0	8.4E-3	3.5E-2	4.7E-2	4.4E-2	4.4E-2	4.4E-2
AVERAGES										
SPREADER, NO REINJ FROM D.C.			3.1E-2	6.2E-3	3.4E-4	0.0	3.9E-2	5.8E-3	6.1E-4	4.9E-4
MASS FIRED OVERFEED			2.0E-2	1.8E-3	8.7E-3	5.9E-3	3.6E-2	1.7E-2	1.5E-2	1.5E-2
HIGH			6.6E-2	2.7E-2	4.2E-2	3.5E-2	7.9E-2	4.4E-2	4.4E-2	4.4E-2
LOW			7.7E-4	1.0E-3	6.0E-5	1.8E-3	5.5E-3	1.5E-3	3.9E-5	8.3E-5
CORRELATIONS WITH -										
FLUE GAS OXYGEN, PERCENT			-0.09	-0.27	-0.36	0.36	-0.21			
TOTAL ASH			0.17	0.28	0.04	-0.58	0.03			
GRATE HEAT RELEASE			0.28	0.24	-0.28	-0.34	0.07			
HYDROCARBONS			0.30	-0.13	-0.13	-0.12	0.14			
BOILER EFFICIENCY			-0.55	0.34	-0.34	0.07	-0.56			
CARBON MONOXIDE			0.14	-0.25	-0.22	-0.19	-0.13			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

SAMARIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - EMISSIONS - - - - NG/J* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	1.8E-3	7.1E-4	1.1E-4	2.0E-3	4.6E-3	2.8E-3	2.2E-3	2.2E-3
B 31	6.0	2670	7.1E-3	1.9E-3	1.2E-4	2.1E-3	1.1E-2	4.3E-3	2.3E-3	2.2E-3
B 33	6.1	2130	1.0E-2	3.4E-3	1.2E-4	2.2E-3	1.6E-2	5.8E-3	2.4E-3	2.4E-3
C 44	8.9	4380	3.4E-2	1.5E-3	4.7E-5	0.0	3.5E-2	4.2E-3	2.9E-4	1.0E-4
C 45	8.3	4360	1.8E-2	1.2E-3	4.5E-5	0.0	1.9E-2	2.5E-3	1.8E-4	7.3E-5
C 46	9.0	3230	2.7E-2	1.6E-3	2.3E-5	0.0	2.9E-2	3.6E-3	2.2E-4	6.6E-5
AVERAGE			1.6E-2	1.7E-3	7.8E-5	1.1E-3	1.9E-2	3.9E-3	1.3E-3	1.2E-3
HIGH			3.4E-2	3.4E-3	1.2E-4	2.2E-3	3.5E-2	5.8E-3	2.4E-3	2.4E-3
LOW			1.8E-3	7.1E-4	2.3E-5	2.0E-3	4.6E-3	2.5E-3	1.8E-4	6.6E-5

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - EMISSIONS - - - - NG/J* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	2.3E-3	7.1E-4	0.0	0.0	3.0E-3	4.7E-4	2.1E-5	4.5E-5
E 16	8.3	2760	1.1E-2	3.9E-3	1.0E-4	0.0	1.5E-2	2.6E-3	2.0E-4	1.6E-4
E 17	6.2	2770	2.7E-3	2.7E-3	6.0E-5	0.0	5.5E-3	1.6E-3	1.0E-4	6.1E-5
F 22	6.0	2980	9.1E-3	3.2E-4	2.5E-4	0.0	1.0E-2	7.2E-4	3.2E-4	2.9E-4
F 30	6.8	2890	1.3E-2	6.4E-4	1.6E-4	0.0	1.4E-2	9.4E-4	2.6E-4	2.2E-4
G 15	8.7	3230	1.5E-2	1.3E-3	6.8E-4	0.0	1.7E-2	1.9E-3	7.9E-4	7.5E-4
G 20	9.2	2320	8.2E-3	1.2E-3	7.6E-4	0.0	1.0E-2	1.7E-3	8.3E-4	8.0E-4
H 11	9.4	1980	5.3E-3	2.4E-4	5.5E-4	0.0	6.1E-3	8.6E-4	5.9E-4	6.4E-4
I 09	5.9	2700	7.1E-3	2.7E-4	2.1E-2	0.0	2.9E-2	2.2E-2	2.1E-2	2.1E-2
I 18	7.8	1670	1.6E-2	5.8E-4	5.6E-3	2.1E-3	2.5E-2	8.5E-3	7.8E-3	7.9E-3
J 15	7.9	1550	7.0E-4	6.1E-4	4.7E-3	1.8E-3	7.8E-3	7.8E-3	6.4E-3	6.5E-3
J 16	8.9	2570	1.5E-3	6.5E-4	7.9E-3	2.0E-3	1.2E-2	1.2E-2	1.0E-2	1.0E-2
K 18	9.8	1280	1.2E-3	0.0	2.8E-3	1.4E-2	1.8E-2	1.7E-2	1.7E-2	1.7E-2
AVERAGES										
SPREADER,NO REINJ FROM D.C.			1.0E-2	1.7E-3	3.4E-4	0.0	1.2E-2	1.6E-3	4.2E-4	3.8E-4
MASS FIRED OVERFEED			4.9E-3	4.4E-4	6.1E-3	2.9E-3	1.4E-2	1.0E-2	9.0E-3	9.0E-3
HIGH			1.6E-2	3.9E-3	2.1E-2	1.4E-2	2.9E-2	2.2E-2	2.1E-2	2.1E-2
LOW			7.0E-4	2.4E-4	6.0E-5	1.8E-3	3.0E-3	4.7E-4	2.1E-5	4.5E-5

CORRELATIONS WITH -					
FLUE GAS OXYGEN, PERCENT	-0.27	-0.11	-0.35	0.36	-0.30
TOTAL ASH	0.43	0.40	-0.03	-0.63	0.02
GRATE HEAT RELEASE	0.54	0.31	-0.37	-0.39	-0.06
HYDROCARBONS	-0.08	-0.24	-0.18	-0.14	-0.38
BOILER EFFICIENCY	-0.58	0.23	-0.28	0.09	-0.56
CARBON MONOXIDE	0.22	-0.31	-0.31	-0.23	-0.24

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15918-564

EUROPIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - - - - NG/J* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	1.1E-3	2.3E-4	1.1E-4	1.5E-3	2.9E-3	1.9E-3	1.6E-3	1.6E-3
B 31	6.0	2670	1.8E-3	1.1E-3	1.2E-4	1.6E-3	4.6E-3	2.7E-3	1.7E-3	1.7E-3
B 33	6.1	2130	1.6E-3	1.2E-3	1.2E-4	1.7E-3	4.7E-3	2.9E-3	1.8E-3	1.8E-3
C 44	8.9	4380	3.4E-2	4.4E-4	4.7E-5	0.0	3.4E-2	3.4E-3	2.9E-4	1.0E-4
C 45	8.3	4360	1.2E-2	3.1E-4	4.5E-5	0.0	1.2E-2	1.3E-3	1.3E-4	6.3E-5
C 46	9.0	3230	1.1E-2	4.8E-4	2.3E-5	0.0	1.1E-2	1.3E-3	1.0E-4	4.0E-5
AVERAGE			1.0E-2	6.3E-4	7.8E-5	8.0E-4	1.2E-2	2.2E-3	9.5E-4	6.9E-4
HIGH			3.4E-2	1.2E-3	1.2E-4	1.7E-3	3.4E-2	3.4E-3	1.8E-3	1.8E-3
LOW			1.1E-3	2.3E-4	2.3E-5	1.5E-3	2.9E-3	1.3E-3	1.0E-4	4.0E-5

• STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR •

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - - - - NG/J* 10.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	13.2	2070	5.4E-4	2.1E-4	0.0	0.0	7.4E-4	1.3E-4	5.2E-6	1.1E-5
E 16	4.3	2760	1.1E-3	1.2E-3	1.0E-4	0.0	2.4E-3	7.8E-4	1.1E-4	1.1E-4
E 17	6.2	2770	9.1E-4	9.0E-4	6.0E-5	0.0	1.9E-3	5.9E-4	7.2E-5	6.7E-5
F 22	6.0	2940	2.7E-3	1.0E-4	2.5E-4	0.0	3.1E-3	3.9E-4	2.7E-4	2.6E-4
F 30	6.8	2890	2.0E-3	1.1E-4	1.1E-4	0.0	2.2E-3	2.3E-4	1.2E-4	1.2E-4
G 15	6.7	3230	3.7E-3	3.2E-4	3.4E-4	0.0	4.3E-3	6.4E-4	3.7E-4	3.6E-4
G 20	9.2	2320	3.1E-3	2.9E-4	1.5E-4	0.0	3.5E-3	4.1E-4	1.8E-4	1.7E-4
H 11	9.4	1980	3.2E-3	1.5E-4	5.5E-4	0.0	3.9E-3	7.4E-4	5.8E-4	6.0E-4
I 09	5.9	2700	4.7E-3	1.0E-4	1.3E-2	0.0	1.8E-2	1.3E-2	1.3E-2	1.3E-2
I 10	7.8	1670	1.0E-2	2.3E-4	1.9E-3	2.1E-3	1.4E-2	4.5E-3	4.1E-3	4.2E-3
J 15	7.9	1550	4.2E-4	1.5E-4	1.4E-3	1.8E-3	3.7E-3	3.7E-3	3.2E-3	3.2E-3
J 16	8.9	2570	3.8E-4	1.6E-4	2.4E-3	2.0E-3	4.9E-3	4.9E-3	4.4E-3	4.4E-3
K 18	9.8	1240	3.0E-4	0.0	2.8E-3	1.4E-2	1.7E-2	1.7E-2	1.7E-2	1.7E-2
AVERAGES										
SPREADER,NO REINJ FROM D.C.			2.3E-3	4.8E-4	1.7E-4	0.0	2.9E-3	5.1E-4	1.9E-4	1.8E-4
MASS FIRED OVERFEED			2.8E-3	1.4E-4	3.1E-3	2.9E-3	8.9E-3	6.3E-3	6.0E-3	6.0E-3
HIGH			1.0E-2	1.2E-3	1.3E-2	1.4E-2	1.8E-2	1.7E-2	1.7E-2	1.7E-2
LOW			3.0E-4	1.0E-4	6.0E-5	1.8E-3	7.4E-4	1.3E-4	5.2E-6	1.1E-5
CORRELATIONS WITH -										
FLUE GAS OXYGEN, PERCENT			-0.24	-0.13	-0.36	0.36	-0.08			
TOTAL ASH			-0.03	0.35	-0.02	-0.63	-0.42			
GRATE HEAT RELEASE			0.06	0.26	-0.33	-0.39	-0.40			
HYDROCARBONS			0.07	-0.17	-0.13	-0.14	-0.14			
BOILER EFFICIENCY			-0.73	0.21	-0.33	0.09	-0.44			
CARBON MONOXIDE			0.08	-0.31	-0.25	-0.23	-0.31			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

GADOLINIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS NG/J: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	1.1E-3	3.4E-4	1.1E-4	2.0E-3	3.5E-3	2.5E-3	2.2E-3	2.2E-3
B 31	6.0	2670	3.5E-3	1.9E-3	1.2E-4	1.6E-3	7.1E-3	3.4E-3	1.7E-3	1.7E-3
B 33	6.1	2130	3.3E-3	3.0E-3	1.2E-4	2.2E-3	8.6E-3	4.8E-3	2.4E-3	2.3E-3
C 44	8.9	4380	6.8E-2	8.0E-4	1.6E-5	0.0	6.8E-2	6.6E-3	5.0E-4	1.2E-4
C 45	8.3	4360	1.2E-2	6.5E-4	1.6E-5	1.1E-3	1.4E-2	2.7E-3	1.2E-3	1.2E-3
C 46	9.0	3230	1.1E-2	8.5E-4	1.2E-5	0.0	1.2E-2	1.6E-3	9.3E-5	2.9E-5
AVERAGE			1.6E-2	1.2E-3	6.6E-5	1.2E-3	1.9E-2	3.6E-3	1.4E-3	1.3E-3
HIGH			6.8E-2	3.0E-3	1.2E-4	2.2E-3	6.8E-2	6.6E-3	2.4E-3	2.3E-3
LOW			1.1E-3	3.4E-4	1.2E-5	1.1E-3	3.5E-3	1.6E-3	9.3E-5	2.9E-5

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS NG/J: 10.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	7.7E-4	7.1E-4	0.0	0.0	1.5E-3	4.2E-4	1.0E-5	2.2E-5
E 16	6.3	2760	3.3E-3	3.9E-3	1.0E-4	0.0	7.3E-3	2.4E-3	1.5E-4	1.3E-4
E 17	6.2	2770	2.7E-3	5.4E-3	6.0E-5	0.0	8.2E-3	3.1E-3	1.2E-4	9.2E-5
F 22	6.0	2980	9.1E-3	3.2E-5	2.5E-4	0.0	9.4E-3	5.6E-4	3.2E-4	2.9E-4
F 33	6.8	2890	6.7E-3	3.2E-5	1.6E-4	0.0	6.9E-3	3.9E-4	2.1E-4	1.9E-4
G 15	8.7	3230	1.5E-2	1.3E-3	3.4E-4	0.0	1.6E-2	1.5E-3	4.5E-4	4.0E-4
G 20	9.2	2320	5.1E-3	4.7E-4	3.9E-5	0.0	5.6E-3	4.6E-4	7.8E-5	6.1E-5
H 11	9.4	1980	5.3E-3	2.2E-4	5.5E-4	0.0	6.1E-3	8.4E-4	5.9E-4	6.4E-4
I 09	9.9	2700	7.1E-3	1.7E-4	2.1E-2	0.0	2.8E-2	2.2E-2	2.1E-2	2.1E-2
I 18	7.8	1670	1.6E-2	3.5E-4	2.8E-3	2.1E-3	2.2E-2	5.6E-3	5.0E-3	5.1E-3
J 15	7.9	1550	1.1E-3	2.5E-4	2.3E-3	1.8E-3	5.5E-3	5.5E-3	4.1E-3	4.1E-3
J 16	8.9	2570	1.5E-3	2.6E-4	5.3E-3	2.0E-3	9.0E-3	9.0E-3	7.3E-3	7.3E-3
K 18	9.8	1280	1.2E-3	0.0	2.8E-3	1.4E-2	1.8E-2	1.7E-2	1.7E-2	1.7E-2
AVERAGES										
SPREADER, NO REINJ FROM D.C.			6.9E-3	1.9E-3	1.6E-4	0.0	9.0E-3	1.4E-3	2.2E-4	1.9E-4
MASS FIRED OVERFEED			4.8E-3	2.8E-4	5.0E-3	2.9E-3	1.3E-2	8.5E-3	7.9E-3	7.9E-3
HIGH			1.6E-2	5.4E-3	2.1E-2	1.4E-2	2.8E-2	2.2E-2	2.1E-2	2.1E-2
LOW			7.7E-4	3.2E-5	3.9E-5	1.8E-3	1.5E-3	3.9E-4	1.0E-5	2.2E-5
CORRELATIONS WITH -										
FLUE GAS OXYGEN, PERCENT			-0.29	-0.22	-0.34	0.36	-0.34			
TOTAL ASH			0.29	0.34	0.04	-0.63	-0.02			
GRATE HEAT RELEASE			0.40	0.26	-0.32	-0.39	-0.11			
HYDROCARBONS			0.00	-0.17	-0.14	-0.14	-0.21			
BOILER EFFICIENCY			-0.69	0.29	-0.30	0.09	-0.57			
CARBON MONOXIDE			0.16	-0.31	-0.25	-0.23	-0.26			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15918-564

TERBIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS NG/J: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.8	2710	1.5E-4	8.0E-5	5.7E-5	1.0E-3	1.5E-3	1.2E-3	1.1E-3	1.1E-3
B 31	6.0	2670	3.5E-4	3.0E-4	5.9E-5	1.1E-3	1.8E-3	1.4E-3	1.1E-3	1.1E-3
B 33	6.1	2130	1.0E-3	2.8E-4	5.9E-5	1.1E-3	2.4E-3	1.5E-3	1.2E-3	1.2E-3
C 44	8.9	4380	6.8E-3	2.3E-4	1.6E-5	0.0	7.0E-3	7.9E-4	6.5E-5	2.7E-5
C 45	8.3	4360	6.8E-3	2.1E-4	1.6E-5	0.0	6.2E-3	7.0E-4	5.9E-5	2.5E-5
C 46	9.0	3230	5.4E-3	3.3E-4	1.2E-5	0.0	5.7E-3	7.4E-4	5.2E-5	2.0E-5
AVERAGE			3.3E-3	2.4E-4	3.7E-5	5.3E-4	4.1E-3	1.0E-3	5.9E-4	5.7E-4
HIGH			6.8E-3	3.3E-4	5.9E-5	1.1E-3	7.0E-3	1.5E-3	1.2E-3	1.2E-3
LOW			3.5E-4	8.0E-5	1.2E-5	1.0E-3	1.5E-3	7.0E-4	5.2E-5	2.0E-5

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS NG/J: 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	3.1E-4	1.3E-4	0.0	0.0	4.4E-4	8.1E-5	3.8E-6	6.5E-6
E 16	4.3	2760	1.0E-3	3.9E-4	4.0E-5	0.0	1.4E-3	2.9E-4	4.9E-5	4.5E-5
E 17	6.2	2770	9.1E-4	8.1E-4	1.6E-5	0.0	1.7E-3	4.9E-4	2.8E-5	2.3E-5
F 22	6.0	2980	9.1E-4	3.2E-5	2.5E-4	0.0	1.2E-3	3.0E-4	2.6E-4	2.6E-4
F 30	6.8	2890	2.0E-3	1.0E-4	5.4E-5	0.0	2.2E-3	1.7E-4	6.9E-5	6.3E-5
G 15	8.7	3230	1.5E-3	5.2E-5	1.7E-4	0.0	1.7E-3	2.5E-4	1.8E-4	1.0E-4
G 20	9.2	2320	8.2E-4	1.2E-4	3.9E-5	0.0	1.0E-3	1.3E-4	4.5E-5	4.3E-5
H 11	9.4	1980	5.3E-4	2.4E-5	1.4E-4	0.0	6.9E-4	1.7E-4	1.4E-4	1.5E-4
I 09	5.9	2700	1.2E-3	2.7E-5	4.2E-3	0.0	5.4E-3	4.3E-3	4.3E-3	4.3E-3
I 18	7.8	1670	2.6E-3	5.8E-5	1.1E-3	7.0E-4	4.5E-3	1.9E-3	1.8E-3	1.9E-3
J 15	7.9	1550	2.8E-4	6.1E-5	7.0E-4	5.9E-4	1.6E-3	1.6E-3	1.3E-3	1.3E-3
J 16	8.9	2570	1.5E-4	2.6E-5	1.3E-3	6.6E-4	2.2E-3	2.2E-3	2.0E-3	2.0E-3
K 18	3.8	1280	6.1E-5	0.0	8.4E-4	7.0E-3	7.9E-3	7.9E-3	7.9E-3	7.9E-3
AVERAGES										
SPREADER,NO REINJ FROM D.C.			1.2E-3	2.5E-4	1.0E-4	0.0	1.5E-3	2.7E-4	1.1E-4	1.0E-4
MASS FIRED OVERFEED			7.3E-4	4.6E-5	1.2E-3	1.3E-3	3.3E-3	2.6E-3	2.5E-3	2.5E-3
HIGH			2.6E-3	8.1E-4	4.2E-3	7.9E-3	7.9E-3	7.9E-3	7.9E-3	7.9E-3
LOW			6.1E-5	2.4E-5	1.6E-5	5.9E-4	4.4E-4	8.1E-5	3.0E-6	6.5E-6
CORRELATIONS WITH -										
FLUE GAS OXYGEN, PERCENT			-0.45	-0.31	-0.37	0.36	-0.06			
TOTAL ASH			0.30	0.28	-0.03	-0.60	-0.42			
GRATE HEAT RELEASE			0.43	0.28	-0.35	-0.36	-0.33			
HYDROCARBONS			-0.15	-0.18	-0.17	-0.13	-0.27			
BOILER EFFICIENCY			-0.45	0.39	-0.31	0.06	-0.21			
CARBON MONOXIDE			0.16	-0.22	-0.26	-0.21	-0.29			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

DYSPROSIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - EMISSIONS - - - - NG/J* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	1.1E-3	4.3E-4	1.1E-4	2.0E-3	3.6E-3	2.6E-3	2.2E-3	2.2E-3
B 31	6.0	2670	7.1E-3	1.4E-3	1.2E-4	2.1E-3	1.1E-2	3.9E-3	2.3E-3	2.2E-3
B 33	6.1	2130	6.5E-3	3.3E-3	1.2E-4	2.2E-3	1.2E-2	5.4E-3	2.4E-3	2.4E-3
C 44	8.9	4380	3.4E-2	8.0E-4	4.7E-5	0.0	3.5E-2	3.6E-3	2.9E-4	1.0E-4
C 45	8.3	4360	1.8E-2	6.9E-4	4.5E-5	0.0	1.9E-2	2.1E-3	1.7E-4	7.3E-5
C 46	9.0	3230	2.7E-2	7.8E-4	2.3E-5	0.0	2.8E-2	3.0E-3	2.2E-4	6.5E-5
AVERAGE			1.6E-2	1.2E-3	7.8E-5	1.1E-3	1.8E-2	3.4E-3	1.3E-3	1.2E-3
HIGH			3.4E-2	3.3E-3	1.2E-4	2.2E-3	3.5E-2	5.4E-3	2.4E-3	2.4E-3
LOW			1.1E-3	4.3E-4	2.3E-5	2.0E-3	3.6E-3	2.1E-3	1.7E-4	6.5E-5

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - EMISSIONS - - - - NG/J* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	7.7E-4	5.6E-4	0.0	0.0	1.3E-3	3.3E-4	9.3E-6	2.8E-5
E 16	8.3	2760	1.1E-2	7.8E-3	1.0E-4	0.0	1.9E-2	4.8E-3	2.3E-4	1.7E-4
E 17	6.2	2770	8.2E-3	2.7E-3	6.0E-5	0.0	1.1E-2	1.8E-3	1.4E-4	1.0E-4
F 22	6.8	2980	2.7E-2	6.4E-4	2.5E-4	0.0	2.8E-2	1.5E-3	4.5E-4	3.7E-4
F 30	6.8	2890	2.2E-2	1.0E-3	2.7E-4	0.0	2.3E-2	1.5E-3	4.3E-4	3.6E-4
G 15	8.7	3230	1.5E-2	5.2E-4	3.4E-4	0.0	1.6E-2	1.1E-3	4.5E-4	4.0E-4
G 20	9.2	2320	5.1E-3	1.2E-3	3.8E-4	0.0	6.7E-3	1.2E-3	4.2E-4	4.1E-4
H 11	9.4	1980	5.3E-3	2.4E-4	5.5E-4	0.0	6.1E-3	8.6E-4	5.9E-4	6.4E-4
I 09	5.9	2700	7.1E-3	1.7E-4	2.1E-2	0.0	2.8E-2	2.2E-2	2.1E-2	2.1E-2
I 18	7.8	1670	1.6E-2	3.5E-4	2.8E-3	2.1E-3	2.2E-2	5.6E-3	5.8E-3	5.1E-3
J 15	7.9	1550	7.0E-4	2.5E-4	2.3E-3	1.8E-3	5.1E-3	5.1E-3	4.1E-3	4.1E-3
J 16	8.9	2570	3.8E-4	2.6E-4	5.3E-3	2.0E-3	7.9E-3	7.9E-3	7.3E-3	7.3E-3
K 18	9.8	1280	6.1E-4	0.0	2.8E-3	1.4E-2	1.7E-2	1.7E-2	1.7E-2	1.7E-2
AVERAGES										
SPREADER,NO REINJ FROM D.C.			1.5E-2	2.3E-3	2.3E-4	0.0	1.7E-2	2.0E-3	3.5E-4	3.0E-4
MASS FIRED OVERFEED			4.5E-3	2.6E-4	5.0E-3	2.9E-3	1.3E-2	8.3E-3	7.9E-3	7.9E-3
HIGH			2.7E-2	7.8E-3	2.1E-2	1.4E-2	2.8E-2	2.2E-2	2.1E-2	2.1E-2
LOW			3.8E-4	1.7E-4	6.0E-5	1.8E-3	1.3E-3	3.3E-4	9.3E-6	2.0E-5
CORRELATIONS WITH -										
FLUE GAS OXYGEN, PERCENT			-0.61	-0.08	-0.38	0.36	-0.69			
TOTAL ASH			0.56	0.31	0.04	-0.63	0.37			
GRATE HEAT RELEASE			0.76	0.24	-0.31	-0.39	0.42			
HYDROCARBONS			-0.03	-0.15	-0.14	-0.14	-0.21			
BOILER EFFICIENCY			-0.18	0.21	-0.31	0.09	-0.28			
CARBON MONOXIDE			0.69	-0.15	-0.25	-0.23	0.37			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15918-564

HOLMIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - - - - NG/J* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	3.5E-4	1.1E-4	5.7E-5	1.0E-3	1.5E-3	1.2E-3	1.1E-3	1.1E-3
B 31	6.0	2670	1.1E-3	2.2E-4	5.9E-5	1.1E-3	2.4E-3	1.4E-3	1.1E-3	1.1E-3
B 33	6.1	2130	2.0E-3	5.6E-4	5.9E-5	1.1E-3	3.7E-3	1.8E-3	1.2E-3	1.2E-3
C 44	8.9	4380	4.1E-3	2.6E-4	1.6E-5	0.0	4.3E-3	5.7E-4	4.7E-5	2.3E-5
C 45	8.3	4360	3.6E-3	1.9E-4	1.6E-5	0.0	3.8E-3	4.7E-4	4.2E-5	2.1E-5
C 46	9.0	3230	3.2E-3	3.1E-4	1.2E-5	0.0	3.6E-3	5.3E-4	3.7E-5	1.7E-5
AVERAGE			2.4E-3	2.8E-4	3.7E-5	5.3E-4	3.2E-3	1.0E-3	5.9E-4	5.7E-4
HIGH			4.1E-3	5.6E-4	5.9E-5	1.1E-3	4.3E-3	1.8E-3	1.2E-3	1.2E-3
LOW			3.5E-4	1.1E-4	1.2E-5	1.0E-3	1.5E-3	4.7E-4	3.7E-5	1.7E-5

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - - - - NG/J* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	5.4E-4	1.3E-4	0.0	0.0	6.7E-4	8.8E-5	4.7E-6	1.0E-5
E 16	8.3	2760	1.1E-3	1.2E-3	4.0E-5	0.0	2.3E-3	7.2E-4	5.5E-5	4.9E-5
E 17	6.2	2770	9.1E-4	8.1E-4	4.0E-5	0.0	1.8E-3	5.2E-4	5.2E-5	4.7E-5
F 22	6.0	2980	3.0E-3	1.1E-4	1.3E-4	0.0	3.3E-3	2.8E-4	1.5E-4	1.4E-4
F 30	6.8	2890	2.2E-3	1.1E-4	1.1E-4	0.0	2.4E-3	2.4E-4	1.2E-4	1.2E-4
G 15	8.7	3230	2.2E-3	1.3E-4	3.4E-4	0.0	2.7E-3	4.8E-4	3.6E-4	3.5E-4
G 20	9.2	2320	2.1E-3	1.2E-4	1.5E-4	0.0	2.3E-3	2.8E-4	1.7E-4	1.6E-4
H 11	9.4	1980	1.6E-3	7.3E-5	5.5E-4	0.0	2.2E-3	6.5E-4	5.7E-4	5.8E-4
I 09	5.9	2700	1.2E-3	6.7E-5	4.2E-3	0.0	5.5E-3	4.3E-3	4.3E-3	4.3E-3
I 18	7.8	1670	1.6E-3	5.8E-5	1.1E-3	7.0E-4	3.5E-3	1.9E-3	1.8E-3	1.8E-3
J 15	7.9	1550	2.8E-4	6.1E-5	7.0E-4	5.9E-4	1.6E-3	1.6E-3	1.3E-3	1.3E-3
J 16	8.9	2570	6.1E-5	6.5E-5	1.3E-3	6.6E-4	2.1E-3	2.1E-3	2.0E-3	2.0E-3
K 18	9.8	1280	6.1E-5	0.0	1.4E-3	7.0E-3	8.5E-3	8.4E-3	8.4E-3	8.4E-3
AVERAGES										
SPREADER,NO REINJ FROM D.C.			1.9E-3	4.1E-4	1.3E-4	0.0	2.5E-3	4.2E-4	1.5E-4	1.4E-4
MASS FIRED OVERFEED			7.6E-4	6.5E-5	1.3E-3	1.3E-3	3.4E-3	2.7E-3	2.6E-3	2.6E-3
HIGH			3.0E-3	1.2E-3	4.2E-3	7.0E-3	8.5E-3	8.4E-3	8.4E-3	8.4E-3
LOW			6.1E-5	5.8E-5	4.0E-5	5.9E-4	6.7E-4	8.8E-5	4.7E-6	1.0E-5
CORRELATIONS WITH -										
FLUE GAS OXYGEN, PERCENT			-0.41	-0.19	-0.28	0.36	-0.03			
TOTAL ASH			0.57	0.35	-0.11	-0.60	-0.32			
GRATE HEAT RELEASE			0.78	0.26	-0.39	-0.36	-0.17			
HYDROCARBONS			0.19	-0.15	-0.09	-0.13	-0.12			
BOILER EFFICIENCY			-0.46	0.29	-0.36	0.08	-0.29			
CARBON MONOXIDE			0.65	-0.20	-0.28	-0.21	-0.09			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

ERBIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - EMISSIONS - - - - NG/J* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	3.5E-3	2.7E-4	1.1E-4	2.0E-3	5.9E-3	2.7E-3	2.2E-3	2.2E-3
B 31	6.0	2670	1.4E-3	7.2E-4	1.2E-4	2.1E-3	4.4E-3	2.9E-3	2.2E-3	2.2E-3
B 33	6.1	2130	3.3E-3	1.1E-3	1.2E-4	2.2E-3	6.7E-3	3.5E-3	2.4E-3	2.3E-3
C 44	8.9	4380	6.8E-3	3.4E-4	4.7E-5	0.0	7.1E-3	9.0E-4	1.0E-4	5.7E-5
C 45	8.3	4360	6.0E-3	2.8E-4	4.5E-5	0.0	6.3E-3	7.8E-4	8.8E-5	5.4E-5
C 46	9.0	3230	5.4E-3	4.5E-4	2.3E-5	0.0	5.9E-3	8.3E-4	6.4E-5	3.2E-5
AVERAGE			4.4E-3	5.3E-4	7.8E-5	1.1E-3	6.1E-3	1.9E-3	1.2E-3	1.1E-3
HIGH			6.8E-3	1.1E-3	1.2E-4	2.2E-3	7.1E-3	3.5E-3	2.4E-3	2.3E-3
LOW			1.4E-3	2.7E-4	2.3E-5	2.8E-3	4.4E-3	7.8E-4	6.4E-5	3.2E-5

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - EMISSIONS - - - - NG/J* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	7.7E-4	2.1E-4	0.0	0.0	1.0E-3	1.4E-4	6.8E-6	1.5E-5
E 16	4.3	2760	3.3E-3	1.2E-3	1.0E-4	0.0	4.6E-3	8.5E-4	1.3E-4	1.2E-4
E 17	6.2	2770	2.7E-3	8.1E-4	6.0E-5	0.0	3.6E-3	5.9E-4	8.4E-5	7.4E-5
F 22	6.0	2980	9.1E-3	1.1E-4	2.5E-4	0.0	9.5E-3	6.0E-4	3.2E-4	2.9E-4
F 30	6.8	2090	6.7E-3	3.2E-4	1.6E-4	0.0	7.2E-3	5.5E-4	2.1E-4	1.9E-4
G 15	8.7	3230	5.9E-3	1.9E-4	3.4E-4	0.0	6.4E-3	6.4E-4	3.8E-4	3.7E-4
G 20	9.2	2320	3.1E-3	1.8E-4	3.8E-4	0.0	3.6E-3	5.8E-4	4.8E-4	3.9E-4
H 11	9.4	1940	4.8E-3	1.5E-4	5.5E-4	0.0	5.5E-3	7.9E-4	5.9E-4	6.3E-4
I 09	5.9	2700	4.7E-3	1.0E-4	2.1E-2	0.0	2.6E-2	2.1E-2	2.1E-2	2.1E-2
I 18	7.8	1670	6.5E-3	2.3E-4	2.8E-3	2.1E-3	1.2E-2	5.2E-3	4.9E-3	5.0E-3
J 15	7.9	1550	4.2E-4	9.2E-5	2.3E-3	1.8E-3	4.6E-3	4.6E-3	4.1E-3	4.1E-3
J 16	6.9	2570	2.3E-4	1.0E-4	5.3E-3	2.0E-3	7.6E-3	7.6E-3	7.3E-3	7.3E-3
K 18	9.8	1240	3.0E-4	0.0	2.6E-3	1.4E-2	1.7E-2	1.7E-2	1.7E-2	1.7E-2
AVERAGES										
SPREADER,NO REINJ FROM D.C.			5.1E-3	4.6E-4	2.2E-4	0.0	5.8E-3	6.4E-4	2.6E-4	2.4E-4
MASS FIRED OVERFEED			2.5E-3	1.2E-4	5.0E-3	2.9E-3	1.0E-2	8.1E-3	7.9E-3	7.9E-3
HIGH			9.1E-3	1.2E-3	2.1E-2	1.4E-2	2.6E-2	2.1E-2	2.1E-2	2.1E-2
LOW			2.3E-4	9.2E-5	6.8E-5	1.8E-3	1.0E-3	1.4E-4	6.8E-6	1.5E-5
CORRELATIONS WITH -										
FLUE GAS OXYGEN, PERCENT			-0.57	-0.20	-0.37	0.36	-0.36			
TOTAL ASH			0.52	0.36	0.04	-0.63	-0.09			
GRATE HEAT RELEASE			0.68	0.29	-0.32	-0.39	-0.19			
HYDROCARBONS			0.20	-0.14	-0.14	-0.14	-0.12			
BOILER EFFICIENCY			-0.47	0.25	-0.31	0.09	-0.40			
CARBON MONOXIDE			0.67	-0.16	-0.25	-0.23	-0.07			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

THULIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - - - - NG/J* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	3.5E-4	5.3E-5	5.7E-4	1.0E-2	1.1E-2	1.1E-2	1.1E-2	1.1E-2
B 31	6.0	2670	3.5E-4	3.6E-5	5.9E-4	1.1E-2	1.2E-2	1.1E-2	1.1E-2	1.1E-2
B 33	6.1	2130	3.3E-4	1.2E-4	5.9E-4	1.1E-2	1.2E-2	1.2E-2	1.2E-2	1.2E-2
C 44	8.9	4380	2.0E-3	7.4E-5	4.7E-5	1.2E-3	3.3E-3	1.5E-3	1.2E-3	1.2E-3
C 45	8.3	4360	1.8E-3	6.9E-5	4.5E-5	0.0	1.9E-3	2.5E-4	5.8E-5	4.8E-5
C 46	9.0	3230	5.4E-4	1.1E-4	2.3E-5	0.0	6.7E-4	1.5E-4	2.8E-5	2.4E-5
AVERAGE			9.8E-4	7.8E-5	3.1E-4	5.5E-3	6.8E-3	6.0E-3	5.8E-3	5.8E-3
HIGH			2.0E-3	1.2E-4	5.9E-4	1.1E-2	1.2E-2	1.2E-2	1.2E-2	1.2E-2
LOW			3.3E-4	3.6E-5	2.3E-5	1.2E-3	6.7E-4	1.5E-4	2.8E-5	2.4E-5

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - - - - NG/J* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	7.7E-5	3.9E-5	0.0	0.0	1.2E-4	2.4E-5	8.1E-7	1.7E-6
E 16	8.3	2760	1.0E-4	1.3E-4	1.0E-4	0.0	3.3E-4	1.7E-4	1.0E-4	1.0E-4
E 17	6.2	2770	9.1E-5	9.0E-5	6.0E-5	0.0	2.4E-4	1.1E-4	6.1E-5	6.0E-5
F 22	6.0	2980	6.1E-4	2.1E-5	2.5E-4	0.0	8.8E-4	2.8E-4	2.6E-4	2.6E-4
F 33	6.8	2690	4.5E-4	1.1E-5	2.7E-4	0.0	7.3E-4	2.9E-4	2.7E-4	2.7E-4
G 15	8.7	3230	5.9E-4	1.3E-5	6.8E-4	0.0	1.3E-3	7.1E-4	6.9E-4	6.8E-4
G 20	9.2	2320	5.1E-4	4.7E-5	2.3E-4	0.0	7.9E-4	2.7E-4	2.3E-4	2.3E-4
H 11	3.4	1980	5.3E-4	2.4E-5	5.5E-4	0.0	1.1E-3	5.8E-4	5.6E-4	5.6E-4
I 09	5.9	2700	1.9E-4	1.7E-5	1.3E-2	0.0	1.3E-2	1.3E-2	1.3E-2	1.3E-2
I 18	7.8	1670	6.5E-4	1.2E-5	5.6E-3	7.0E-3	1.3E-2	1.3E-2	1.3E-2	1.3E-2
J 15	7.9	1550	7.0E-5	1.5E-5	4.7E-3	5.9E-3	1.1E-2	1.1E-2	1.1E-2	1.1E-2
J 16	8.9	2570	2.3E-5	2.6E-5	7.9E-3	6.6E-3	1.5E-2	1.5E-2	1.5E-2	1.5E-2
K 18	9.8	1280	6.1E-5	0.0	1.4E-3	7.0E-3	8.5E-3	8.4E-3	8.4E-3	8.4E-3
AVERAGES										
SPREADER, NO REINJ FROM D.C.			3.9E-4	5.2E-5	2.7E-4	0.0	7.1E-4	3.1E-4	2.7E-4	2.7E-4
MASS FIRED OVERFEED			2.3E-4	1.9E-5	4.7E-3	3.8E-3	8.7E-3	8.5E-3	8.5E-3	8.5E-3
HIGH			6.5E-4	1.3E-4	1.3E-2	7.0E-3	1.5E-2	1.5E-2	1.5E-2	1.5E-2
LOW			2.3E-5	1.1E-5	6.0E-5	5.9E-3	1.2E-4	2.4E-5	8.1E-7	1.7E-6
CORRELATIONS WITH -										
FLUE GAS OXYGEN, PERCENT			-0.15	-0.07	-0.30	0.26	-0.07			
TOTAL ASH			0.23	0.31	-0.09	-0.69	-0.42			
GRATE HEAT RELEASE			0.53	0.17	-0.42	-0.52	-0.54			
HYDROCARBONS			0.33	-0.11	-0.19	-0.23	-0.24			
BOILER EFFICIENCY			-0.67	0.27	-0.20	0.19	-0.06			
CARBON MONOXIDE			0.49	-0.24	-0.34	-0.37	-0.41			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

YTTERBIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS NG/J: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	1.1E-3	2.4E-4	1.1E-4	2.0E-3	3.4E-3	2.4E-3	2.2E-3	2.2E-3
B 31	6.0	2670	1.4E-3	1.6E-4	1.2E-4	2.1E-3	3.8E-3	2.5E-3	2.2E-3	2.2E-3
B 33	6.1	2130	3.3E-3	1.1E-3	1.2E-4	2.2E-3	6.7E-3	3.5E-3	2.4E-3	2.3E-3
C 44	8.9	4380	6.8E-3	4.3E-4	4.7E-5	0.0	7.2E-3	1.0E-3	1.0E-4	5.7E-5
C 45	8.3	4360	6.0E-3	3.4E-4	4.5E-5	0.0	6.3E-3	8.3E-4	8.9E-5	5.4E-5
C 46	9.8	3230	5.4E-3	5.6E-4	2.3E-5	0.0	6.0E-3	9.2E-4	6.5E-5	3.2E-5
AVERAGE			4.0E-3	4.8E-4	7.8E-5	1.1E-3	5.6E-3	1.8E-3	1.2E-3	1.1E-3
HIGH			6.8E-3	1.1E-3	1.2E-4	2.2E-3	7.2E-3	3.5E-3	2.4E-3	2.3E-3
LOW			1.1E-3	1.6E-4	2.3E-5	2.0E-3	3.4E-3	8.3E-4	6.5E-5	3.2E-5

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS NG/J: 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	7.7E-4	2.7E-4	0.0	0.0	1.0E-3	1.7E-4	7.2E-6	1.5E-5
E 16	4.3	2760	3.3E-3	3.9E-4	1.8E-4	0.0	3.8E-3	4.2E-4	1.2E-4	1.1E-4
E 17	6.2	2770	2.7E-3	2.7E-4	6.8E-5	0.0	3.1E-3	3.0E-4	8.1E-5	7.2E-5
F 22	6.0	2980	2.7E-3	1.0E-4	2.5E-4	0.0	3.1E-3	3.9E-4	2.7E-4	2.6E-4
F 30	6.8	2890	6.7E-3	3.2E-4	1.6E-4	0.0	7.2E-3	5.5E-4	2.1E-4	1.9E-4
G 15	4.7	3210	3.7E-3	1.9E-4	3.4E-4	0.0	4.2E-3	5.7E-4	3.7E-4	3.6E-4
G 20	9.2	2320	3.1E-3	2.9E-4	3.8E-4	0.0	3.8E-3	6.4E-4	4.8E-4	3.9E-4
H 11	9.4	1930	3.2E-3	1.5E-4	5.5E-4	0.0	3.9E-3	7.4E-4	5.8E-4	4.8E-4
I 09	5.9	2700	1.9E-3	1.7E-4	2.1E-2	0.0	2.3E-2	2.1E-2	2.1E-2	2.1E-2
I 14	7.8	1670	6.5E-3	3.5E-4	1.9E-3	2.1E-3	1.1E-2	4.4E-3	4.1E-3	4.1E-3
J 15	7.9	1550	4.2E-4	2.5E-4	1.4E-3	1.8E-3	3.8E-3	3.8E-3	3.2E-3	3.2E-3
J 16	6.9	2570	2.3E-4	1.6E-4	2.4E-3	2.0E-3	4.7E-3	4.7E-3	4.4E-3	4.4E-3
K 18	9.8	1280	3.0E-4	0.0	2.8E-3	1.4E-2	1.7E-2	1.7E-2	1.7E-2	1.7E-2
AVERAGES										
SPREADER,NO REINJ FROM D.C.			3.7E-3	2.6E-4	2.2E-4	8.0	4.2E-3	4.8E-4	2.4E-4	2.3E-4
MASS FIRED OVERFEED			1.9E-3	1.9E-4	4.3E-3	2.9E-3	9.3E-3	7.5E-3	7.2E-3	7.2E-3
HIGH			6.7E-3	3.9E-4	2.1E-2	1.4E-2	2.3E-2	2.1E-2	2.1E-2	2.1E-2
LOW			2.3E-4	1.0E-4	6.0E-5	1.8E-3	1.0E-3	1.7E-4	7.2E-6	1.5E-5
CORRELATIONS WITH -										
FLUE GAS OXYGEN, PERCENT			-0.34	-0.11	-0.40	0.36	-0.24			
TOTAL ASH			0.38	0.19	0.06	-0.63	-0.23			
GRATE HEAT RELEASE			0.56	0.17	-0.27	-0.39	-0.29			
HYDROCARBONS			0.09	-0.25	-0.12	-0.14	-0.17			
BOILER EFFICIENCY			-0.42	0.07	-0.35	0.09	-0.39			
CARBON MONOXIDE			0.35	-0.21	-0.22	-0.23	-0.22			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

LUTETIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - EMISSIONS - - - - NG/J* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	3.5E-4	2.1E-5	5.7E-5	1.0E-3	1.4E-3	1.1E-3	1.1E-3	1.1E-3
B 31	6.0	2670	3.5E-4	2.2E-5	5.9E-5	1.1E-3	1.5E-3	1.2E-3	1.1E-3	1.1E-3
B 33	6.1	2130	3.3E-4	3.4E-5	5.9E-5	1.1E-3	1.5E-3	1.2E-3	1.2E-3	1.2E-3
C 44	8.9	4380	6.8E-4	2.6E-5	1.6E-5	0.0	7.2E-4	1.0E-4	2.1E-5	1.7E-5
C 45	8.3	4360	6.0E-4	4.1E-5	1.6E-5	0.0	6.5E-4	1.0E-4	2.0E-5	1.7E-5
C 46	9.0	3230	5.4E-4	3.3E-5	1.2E-5	0.0	5.8E-4	8.4E-5	1.6E-5	1.3E-5
AVERAGE			4.7E-4	2.9E-5	3.7E-5	5.3E-4	1.1E-3	6.3E-4	5.7E-4	5.7E-4
HIGH			6.8E-4	4.1E-5	5.9E-5	1.1E-3	1.5E-3	1.2E-3	1.2E-3	1.2E-3
LOW			3.3E-4	2.1E-5	1.2E-5	1.0E-3	5.8E-4	8.4E-5	1.6E-5	1.3E-5

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - EMISSIONS - - - - NG/J* 10.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	7.7E-5	3.9E-5	0.0	0.0	1.2E-4	2.4E-5	8.1E-7	1.7E-6
E 16	8.3	2760	3.3E-4	1.2E-4	4.0E-5	0.0	4.9E-4	1.1E-4	4.3E-5	4.1E-5
E 17	6.2	2770	2.7E-4	9.0E-5	1.6E-5	0.0	3.8E-4	7.4E-5	1.8E-5	1.7E-5
F 22	6.0	2980	3.0E-4	1.1E-5	1.0E-4	0.0	4.1E-4	1.1E-4	1.0E-4	1.0E-4
F 30	6.8	2890	2.2E-4	1.1E-5	1.1E-4	0.0	3.4E-4	1.2E-4	1.1E-4	1.1E-4
G 15	8.7	3230	3.7E-4	1.3E-5	1.7E-4	0.0	5.5E-4	1.9E-4	1.7E-4	1.7E-4
G 20	9.2	2320	2.1E-4	1.2E-5	1.5E-4	0.0	3.7E-4	1.7E-4	1.5E-4	1.5E-4
H 11	9.4	1940	4.8E-4	7.3E-6	1.4E-4	0.0	6.2E-4	1.6E-4	1.4E-4	1.5E-4
I 09	5.9	2730	1.9E-4	6.7E-6	4.2E-3	0.0	4.4E-3	4.3E-3	4.2E-3	4.2E-3
I 18	7.8	1670	6.5E-4	1.2E-5	1.1E-3	7.0E-4	2.5E-3	1.8E-3	1.8E-3	1.8E-3
J 15	7.9	1550	2.8E-5	6.1E-6	7.0E-4	5.9E-4	1.3E-3	1.3E-3	1.3E-3	1.3E-3
J 16	8.9	2570	1.5E-5	6.5E-6	1.3E-3	6.6E-4	2.0E-3	2.0E-3	2.0E-3	2.0E-3
K 18	9.8	1280	6.1E-5	0.0	1.4E-3	7.0E-3	8.5E-3	8.4E-3	8.4E-3	8.4E-3
AVERAGES										
SPREADER,NO REINJ FROM D.C.			2.8E-4	4.2E-5	1.0E-4	0.0	4.2E-4	1.3E-4	1.0E-4	1.0E-4
MASS FIRED OVERFEED			2.1E-4	1.1E-5	1.3E-3	1.3E-3	2.8E-3	2.6E-3	2.6E-3	2.6E-3
HIGH			6.5E-4	1.2E-4	4.2E-3	7.0E-3	8.5E-3	8.4E-3	8.4E-3	8.4E-3
LOW			1.5E-5	6.1E-6	1.6E-5	5.9E-4	1.2E-4	2.4E-5	8.1E-7	1.7E-6

CORRELATIONS WITH -					
FLUE GAS OXYGEN, PERCENT	-0.18	-0.13	-0.30	0.36	0.13
TOTAL ASH	0.12	0.30	-0.11	-0.60	-0.53
GRATE HEAT RELEASE	0.31	0.15	-0.39	-0.36	-0.46
HYDROCARBONS	0.38	-0.17	-0.16	-0.13	-0.17
BOILER EFFICIENCY	-0.62	0.34	-0.31	0.08	-0.13
CARBON MONOXIDE	0.20	-0.23	-0.31	-0.21	-0.31

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS NG/J 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	1.8E-3	4.7E-5	1.1E-4	2.0E-3	3.9E-3	2.3E-3	2.2E-3	2.2E-3
B 31	6.0	2670	1.8E-3	3.6E-5	1.2E-4	2.1E-3	4.0E-3	2.4E-3	2.2E-3	2.2E-3
B 33	6.1	2130	1.6E-3	5.8E-5	1.2E-4	2.2E-3	4.0E-3	2.5E-3	2.3E-3	2.3E-3
C 44	8.9	4380	6.8E-3	3.7E-4	4.7E-5	5.9E-4	7.8E-3	1.5E-3	6.9E-4	6.5E-4
C 45	8.3	4360	6.0E-4	1.3E-4	4.5E-6	0.0	7.3E-4	1.5E-4	1.0E-5	5.6E-6
C 46	9.0	3230	3.2E-3	5.3E-5	2.3E-5	5.9E-4	3.9E-3	9.4E-4	6.4E-4	6.2E-4
AVERAGE			2.6E-3	1.1E-4	7.1E-5	1.3E-3	4.1E-3	1.6E-3	1.3E-3	1.3E-3
HIGH			6.8E-3	3.7E-4	1.2E-4	2.2E-3	7.8E-3	2.5E-3	2.3E-3	2.3E-3
LOW			6.0E-4	3.6E-5	4.5E-6	5.9E-4	7.3E-4	1.5E-4	1.0E-5	5.6E-6

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS NG/J 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	1.5E-3	4.1E-4	0.0	0.0	1.9E-3	2.8E-4	1.4E-5	2.9E-5
E 16	8.3	2760	1.1E-3	1.3E-3	1.0E-4	0.0	2.5E-3	8.5E-4	1.2E-4	1.1E-4
E 17	6.2	2770	9.1E-4	9.0E-4	6.0E-5	0.0	1.9E-3	5.9E-4	7.2E-5	6.7E-5
F 22	6.0	2980	3.0E-3	1.1E-4	2.5E-4	0.0	3.4E-3	4.1E-4	2.8E-4	2.7E-4
F 30	6.8	2890	6.7E-4	3.2E-5	2.7E-4	0.0	1.0E-3	3.1E-4	2.8E-4	2.7E-4
G 15	8.7	3230	5.9E-3	3.2E-4	3.4E-4	0.0	6.6E-3	7.1E-4	3.8E-4	3.7E-4
G 23	9.2	2320	5.1E-3	2.9E-4	7.6E-4	0.0	6.2E-3	1.1E-3	8.0E-4	7.8E-4
H 11	4.4	1980	1.6E-4	4.9E-5	5.5E-4	0.0	7.6E-4	5.9E-4	5.6E-4	5.6E-4
I 09	5.9	2700	9.4E-4	1.0E-4	2.1E-2	0.0	2.2E-2	2.1E-2	2.1E-2	2.1E-2
I 18	7.8	1670	1.3E-3	1.7E-4	2.8E-3	2.1E-3	6.4E-3	5.0E-3	4.9E-3	4.9E-3
J 15	7.9	1550	1.1E-4	9.2E-5	2.3E-3	1.8E-3	4.3E-3	4.3E-3	4.1E-3	4.1E-3
J 16	8.9	2570	3.1E-5	1.0E-4	5.3E-3	2.0E-3	7.4E-3	7.4E-3	7.2E-3	7.3E-3
K 18	9.8	1260	9.1E-4	0.0	2.8E-3	1.4E-2	1.8E-2	1.7E-2	1.7E-2	1.7E-2
AVERAGES										
SPREADER,NO REINJ FROM D.C.			2.8E-3	4.9E-4	3.0E-4	0.0	3.6E-3	6.6E-4	3.2E-4	3.1E-4
MASS FIRED OVERFEED			7.1E-4	1.3E-4	5.0E-3	2.9E-3	8.7E-3	8.0E-3	7.8E-3	7.9E-3
HIGH			5.9E-3	1.3E-3	2.1E-2	1.4E-2	2.2E-2	2.1E-2	2.1E-2	2.1E-2
LOW			3.1E-5	3.2E-5	6.0E-5	1.8E-3	7.6E-4	2.8E-4	1.4E-5	2.9E-5
CORRELATIONS WITH -										
FLUE GAS OXYGEN, PERCENT			0.10	-0.06	-0.37	0.36	-0.09			
TOTAL ASH			0.41	0.33	0.04	-0.63	-0.20			
GRATE HEAT RELEASE			0.48	0.17	-0.31	-0.39	-0.35			
HYDROCARBONS			-0.22	-0.23	-0.14	-0.14	-0.29			
BOILER EFFICIENCY			-0.47	0.24	-0.31	0.09	-0.34			
CARBON MONOXIDE			-0.03	-0.33	-0.25	-0.23	-0.38			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

TANTALUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS NG/J: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	2.1E-3	1.3E-4	1.1E-3	1.5E-2	1.9E-2	1.7E-2	1.6E-2	1.6E-2
B 31	6.0	2670	2.1E-3	7.2E-5	1.2E-3	1.6E-2	1.9E-2	1.7E-2	1.7E-2	1.7E-2
B 33	6.1	2130	2.0E-3	1.2E-4	1.2E-3	1.7E-2	2.0E-2	1.8E-2	1.8E-2	1.8E-2
C 44	8.9	4380	2.0E-2	2.6E-5	1.4E-4	0.0	2.0E-2	1.9E-3	2.6E-4	1.7E-4
C 45	8.3	4360	1.2E-2	1.2E-4	2.2E-4	0.0	1.2E-2	1.4E-3	3.1E-4	2.4E-4
C 46	9.0	3230	1.6E-2	3.3E-5	4.7E-5	0.0	1.6E-2	1.5E-3	1.6E-4	7.1E-5
AVERAGE			9.1E-3	8.4E-5	6.5E-4	8.0E-3	1.8E-2	9.5E-3	8.7E-3	8.6E-3
HIGH			2.0E-2	1.3E-4	1.2E-3	1.7E-2	2.0E-2	1.8E-2	1.8E-2	1.8E-2
LOW			2.0E-3	2.6E-5	4.7E-5	1.5E-2	1.2E-2	1.4E-3	1.6E-4	7.1E-5

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS NG/J: 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	3.8E-4	6.5E-4	0.0	0.0	1.0E-3	3.7E-4	7.2E-6	1.5E-5
E 16	8.3	2760	3.3E-3	2.6E-4	1.8E-4	0.0	3.7E-3	4.3E-4	2.0E-4	1.9E-4
E 17	6.2	2770	1.6E-3	2.7E-4	1.2E-4	0.0	2.2E-3	3.3E-4	1.3E-4	1.3E-4
F 22	6.0	2980	6.1E-3	2.1E-4	6.3E-4	0.0	6.9E-3	9.4E-4	6.8E-4	6.6E-4
F 30	6.8	2690	1.3E-3	6.4E-5	1.6E-3	0.0	3.0E-3	1.7E-3	1.6E-3	1.6E-3
G 15	4.7	3230	1.5E-3	4.5E-5	1.4E-3	0.0	2.9E-3	1.4E-3	1.4E-3	1.4E-3
G 23	9.2	2320	2.1E-3	4.1E-5	1.5E-3	0.0	3.6E-3	1.6E-3	1.5E-3	1.5E-3
H 11	9.4	1980	3.2E-4	4.9E-5	8.3E-4	0.0	1.2E-3	8.7E-4	8.3E-4	8.4E-4
I 09	5.9	2700	9.4E-4	2.4E-5	1.3E-2	0.0	1.4E-2	1.3E-2	1.3E-2	1.3E-2
I 14	7.8	1670	2.3E-3	2.3E-4	1.1E-2	7.0E-3	2.1E-2	1.8E-2	1.8E-2	1.8E-2
J 15	7.9	1550	1.4E-4	2.1E-4	7.3E-3	5.9E-3	1.3E-2	1.3E-2	1.3E-2	1.3E-2
J 16	9.9	2570	5.3E-5	2.3E-4	1.3E-2	2.0E-2	3.3E-2	3.3E-2	3.3E-2	3.3E-2
K 18	9.8	1280	2.4E-4	0.0	2.8E-3	3.5E-2	3.8E-2	3.8E-2	3.8E-2	3.8E-2
AVERAGES										
SPREADER,NO REINJ FROM D.C.			2.7E-3	1.5E-4	9.1E-4	0.0	3.7E-3	1.1E-3	9.3E-4	9.2E-4
MASS FIRED OVERFEED			6.2E-4	2.0E-4	6.8E-3	1.0E-2	1.7E-2	1.7E-2	1.7E-2	1.7E-2
HIGH			6.1E-3	6.5E-4	1.3E-2	3.5E-2	3.8E-2	3.8E-2	3.8E-2	3.8E-2
LOW			5.3E-5	2.4E-5	1.2E-4	5.9E-3	1.0E-3	3.3E-4	7.2E-6	1.5E-5
CORRELATIONS WITH -										
FLUE GAS OXYGEN, PERCENT			-0.51	0.18	-0.19	0.39	0.19			
TOTAL ASH			0.47	-0.06	-0.20	-0.57	-0.50			
GRATE HEAT RELEASE			0.62	-0.39	-0.43	-0.45	-0.48			
HYDROCARBONS			-0.11	-0.22	-0.23	-0.10	-0.26			
BOILER EFFICIENCY			-0.04	0.53	-0.16	0.17	0.08			
CARBON MONOXIDE			0.50	-0.11	-0.35	-0.28	-0.32			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15918-564

TUNGSTEN

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - - - - NG/J* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	1.1E-3	1.0E-3	1.1E-3	2.0E-3	5.2E-3	4.8E-3	3.2E-3	3.2E-3
B 31	6.0	2670	1.1E-3	2.7E-3	1.2E-3	2.1E-3	7.0E-3	5.4E-3	3.3E-3	3.3E-3
B 33	6.1	2130	1.0E-3	4.5E-3	1.7E-3	2.2E-3	9.4E-3	7.4E-3	4.0E-3	4.0E-3
C 44	8.9	4380	6.8E-3	1.5E-3	7.0E-4	3.5E-3	1.3E-2	6.0E-3	4.3E-3	4.2E-3
C 45	8.3	4360	3.0E-3	6.7E-4	2.2E-4	3.4E-3	7.3E-3	4.4E-3	3.6E-3	3.6E-3
C 46	9.0	3230	2.7E-3	1.0E-3	4.7E-4	3.5E-3	7.8E-3	5.0E-3	4.0E-3	4.0E-3
AVERAGE			2.6E-3	1.9E-3	9.1E-4	2.8E-3	8.2E-3	5.4E-3	3.7E-3	3.7E-3
HIGH			6.8E-3	4.5E-3	1.7E-3	3.5E-3	1.3E-2	7.4E-3	4.3E-3	4.2E-3
LOW			1.0E-3	6.7E-4	2.2E-4	2.0E-3	5.2E-3	4.0E-3	3.2E-3	3.2E-3

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - - - - NG/J* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	7.7E-4	8.9E-3	0.0	0.0	1.0E-2	4.9E-3	6.8E-5	1.4E-4
E 16	8.3	2760	1.1E-3	1.3E-3	1.8E-3	0.0	4.2E-3	2.5E-3	1.8E-3	1.8E-3
E 17	6.2	2770	2.7E-4	5.4E-4	6.0E-5	0.0	8.8E-4	3.7E-4	6.5E-5	6.3E-5
F 22	6.0	2980	1.8E-3	3.2E-4	6.3E-4	0.0	2.8E-3	8.7E-4	6.5E-4	6.4E-4
F 30	6.8	2890	2.2E-3	3.2E-4	1.6E-3	0.0	4.2E-3	1.9E-3	1.6E-3	1.6E-3
G 15	8.7	3230	1.5E-3	1.9E-4	3.4E-4	0.0	2.0E-3	5.0E-4	3.5E-4	3.5E-4
G 20	9.2	2320	5.1E-4	4.7E-4	3.8E-4	0.0	1.4E-3	6.6E-4	3.9E-4	3.8E-4
H 11	9.4	1980	1.6E-3	7.3E-4	5.5E-3	0.0	7.9E-3	6.0E-3	5.6E-3	5.6E-3
I 09	5.9	2700	1.9E-3	6.7E-4	2.1E-2	0.0	2.4E-2	2.2E-2	2.1E-2	2.1E-2
I 18	7.8	1670	1.0E-3	1.2E-3	2.8E-2	2.1E-3	3.2E-2	3.1E-2	3.0E-2	3.0E-2
J 15	7.9	1550	4.2E-5	1.5E-3	2.3E-3	1.8E-3	5.7E-3	5.7E-3	4.1E-3	4.1E-3
J 16	8.9	2570	2.3E-5	1.6E-3	1.3E-2	2.0E-3	1.7E-2	1.7E-2	1.5E-2	1.5E-2
K 18	9.8	1280	1.8E-4	0.0	2.8E-3	1.4E-2	1.7E-2	1.7E-2	1.7E-2	1.7E-2
AVERAGES										
SPREADER,NO REINJ FROM D.C.			1.2E-3	5.3E-4	8.0E-4	0.0	2.6E-3	1.1E-3	8.2E-4	8.1E-4
MASS FIRED OVERFEED			7.8E-4	2.1E-3	1.0E-2	2.9E-3	1.6E-2	1.5E-2	1.3E-2	1.3E-2
HIGH			2.2E-3	8.9E-3	2.8E-2	1.4E-2	3.2E-2	3.1E-2	3.0E-2	3.0E-2
LOW			2.3E-5	1.9E-4	6.0E-5	1.8E-3	8.8E-4	3.7E-4	6.5E-5	6.3E-5
CORRELATIONS WITH -										
FLUE GAS OXYGEN, PERCENT			-0.44	0.44	-0.22	0.36	0.01			
TOTAL ASH			0.53	-0.19	-0.22	-0.63	-0.46			
GRATE HEAT RELEASE			0.48	-0.59	-0.38	-0.39	-0.61			
HYDROCARBONS			0.31	-0.11	-0.05	-0.14	-0.10			
BOILER EFFICIENCY			-0.46	0.31	-0.45	0.09	-0.34			
CARBON MONOXIDE			0.66	-0.16	-0.25	-0.23	-0.31			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

RHENIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - - - - NG/J* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	7.0E-4	2.7E-5	8.6E-5	1.5E-3	2.3E-3	1.7E-3	1.6E-3	1.6E-3
B 31	6.0	2670	7.1E-4	3.6E-5	7.9E-5	1.6E-3	2.4E-3	1.8E-3	1.7E-3	1.7E-3
B 33	6.1	2130	6.5E-4	5.8E-5	7.9E-5	1.7E-3	2.5E-3	1.8E-3	1.7E-3	1.7E-3
C 44	8.9	4380	2.0E-3	1.7E-5	2.3E-5	5.9E-4	2.7E-3	8.0E-4	6.3E-4	6.1E-4
C 45	8.3	4360	1.8E-3	1.4E-5	2.2E-5	5.6E-4	2.4E-3	7.5E-4	6.0E-4	5.9E-4
C 46	9.0	3230	1.6E-3	2.2E-5	2.3E-5	5.9E-4	2.3E-3	7.7E-4	6.3E-4	6.2E-4
AVERAGE			1.2E-3	2.9E-5	5.2E-5	1.1E-3	2.4E-3	1.3E-3	1.1E-3	1.1E-3
HIGH			2.0E-3	5.8E-5	8.6E-5	1.7E-3	2.7E-3	1.8E-3	1.7E-3	1.7E-3
LOW			6.5E-4	1.4E-5	2.2E-5	5.6E-4	2.3E-3	7.5E-4	6.0E-4	5.9E-4

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SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - - - - NG/J* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	1.5E-4	8.7E-5	0.0	0.0	2.4E-4	5.3E-5	1.7E-6	3.6E-6
E 16	8.3	2760	6.6E-4	7.8E-5	4.0E-5	0.0	7.8E-4	1.0E-4	4.5E-5	4.3E-5
E 17	6.2	2770	5.5E-4	5.4E-5	6.0E-5	0.0	6.6E-4	1.1E-4	6.4E-5	6.2E-5
F 22	6.0	2980	9.1E-4	3.2E-5	2.5E-4	0.0	1.2E-3	3.0E-4	2.6E-4	2.6E-4
F 30	6.8	2890	6.7E-4	3.2E-5	1.1E-4	0.0	8.1E-4	1.5E-4	1.1E-4	1.1E-4
G 15	8.7	3230	2.9E-4	5.8E-5	3.4E-4	0.0	6.9E-4	3.8E-4	3.4E-4	3.4E-4
G 20	9.2	2320	4.1E-4	2.3E-5	2.3E-4	0.0	6.6E-4	2.5E-4	2.3E-4	2.3E-4
H 11	9.4	1980	3.2E-4	7.3E-6	5.5E-4	0.0	8.8E-4	5.7E-4	5.6E-4	5.6E-4
I 09	5.9	2700	9.4E-5	1.3E-5	1.3E-2	0.0	1.3E-2	1.3E-2	1.3E-2	1.3E-2
I 18	7.8	1670	1.3E-4	2.3E-5	1.9E-3	2.1E-3	4.2E-3	4.1E-3	4.0E-3	4.0E-3
J 15	7.9	1550	5.6E-6	1.2E-5	1.4E-3	1.8E-3	3.2E-3	3.2E-3	3.2E-3	3.2E-3
J 16	8.9	2570	3.1E-6	1.3E-5	2.4E-3	2.0E-3	4.4E-3	4.4E-3	4.4E-3	4.4E-3
K 18	9.8	1280	1.2E-4	0.0	2.8E-3	1.4E-2	1.7E-2	1.7E-2	1.7E-2	1.7E-2
AVERAGES										
SPREADER,NO REINJ FROM D.C.			5.8E-4	4.6E-5	1.7E-4	0.0	8.0E-4	2.2E-4	1.8E-4	1.7E-4
MASS FIRED OVERFEED			1.2E-4	2.2E-5	3.1E-3	2.9E-3	6.1E-3	6.0E-3	6.0E-3	6.0E-3
HIGH			9.1E-4	8.7E-5	1.3E-2	1.4E-2	1.7E-2	1.7E-2	1.7E-2	1.7E-2
LOW			3.1E-6	7.3E-6	4.0E-5	1.8E-3	2.4E-4	5.3E-5	1.7E-6	3.6E-6
CORRELATIONS WITH -										
FLUE GAS OXYGEN, PERCENT			-0.45	0.07	-0.35	0.36	0.01			
TOTAL ASH			0.60	0.45	-0.02	-0.63	-0.44			
GRATE HEAT RELEASE			0.81	0.14	-0.33	-0.39	-0.46			
HYDROCARBONS			0.09	-0.29	-0.13	-0.14	-0.19			
BOILER EFFICIENCY			0.10	0.22	-0.34	0.09	-0.15			
CARBON MONOXIDE			0.67	-0.11	-0.25	-0.23	-0.29			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

OSMIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS NG/J: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	1.1E-3	6.7E-5	2.3E-4	5.1E-3	6.4E-3	5.5E-3	5.3E-3	5.3E-3
B 31	6.0	2670	1.1E-3	4.3E-5	2.4E-4	5.3E-3	6.6E-3	5.6E-3	5.5E-3	5.5E-3
B 33	6.1	2130	1.0E-3	4.6E-5	2.4E-4	5.5E-3	6.8E-3	5.9E-3	5.8E-3	5.8E-3
C 44	8.9	4380	2.0E-3	2.6E-5	9.3E-5	0.0	2.1E-3	2.9E-4	1.1E-4	1.0E-4
C 45	8.3	4360	1.8E-3	2.1E-5	8.9E-5	0.0	1.9E-3	2.6E-4	1.0E-4	9.2E-5
C 46	9.0	3230	1.6E-3	3.3E-5	4.7E-5	0.0	1.7E-3	2.1E-4	5.8E-5	4.9E-5
AVERAGE			1.4E-3	3.9E-5	1.6E-4	2.7E-3	4.3E-3	3.0E-3	2.8E-3	2.8E-3
HIGH			2.0E-3	6.7E-5	2.4E-4	5.5E-3	6.8E-3	5.9E-3	5.8E-3	5.8E-3
LOW			1.0E-3	2.1E-5	4.7E-5	5.1E-3	1.7E-3	2.1E-4	5.8E-5	4.9E-5

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS NG/J: 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	2.3E-4	1.0E-4	0.0	0.0	3.3E-4	6.3E-5	2.3E-6	5.0E-6
E 16	8.3	2760	6.6E-4	7.8E-5	1.0E-4	0.0	8.4E-4	1.6E-4	1.0E-4	1.0E-4
E 17	6.2	2770	5.5E-4	5.4E-5	1.2E-4	0.0	7.2E-4	1.7E-4	1.2E-4	1.2E-4
F 22	6.0	2980	1.8E-3	6.4E-5	6.3E-4	0.0	2.5E-3	7.3E-4	6.5E-4	6.4E-4
F 30	6.8	2890	1.3E-3	6.4E-5	2.7E-4	0.0	1.7E-3	3.5E-4	2.8E-4	2.8E-4
G 15	8.7	3230	3.7E-4	5.8E-5	3.4E-4	0.0	7.7E-4	3.8E-4	3.4E-4	3.4E-4
G 20	9.2	2320	5.1E-4	2.9E-5	3.8E-4	0.0	9.2E-4	4.1E-4	3.8E-4	3.8E-4
H 11	9.4	1980	3.2E-4	1.5E-5	8.3E-4	0.0	1.2E-3	8.5E-4	8.3E-4	8.4E-4
I 09	5.9	2700	1.2E-4	1.7E-5	2.1E-2	0.0	2.1E-2	2.1E-2	2.1E-2	2.1E-2
I 18	7.8	1670	1.6E-4	3.5E-5	2.8E-3	3.5E-3	6.5E-3	6.3E-3	6.3E-3	6.3E-3
J 15	7.9	1550	7.0E-6	1.5E-5	2.3E-3	2.9E-3	5.3E-3	5.3E-3	5.3E-3	5.3E-3
J 16	8.9	2570	3.8E-6	1.6E-5	5.3E-3	3.3E-3	8.6E-3	8.6E-3	8.6E-3	8.6E-3
K 18	9.8	1280	1.2E-4	0.0	2.8E-3	1.4E-2	1.7E-2	1.7E-2	1.7E-2	1.7E-2
AVERAGES										
SPREADER, NO REINJ FROM D.C.			8.7E-4	5.8E-5	3.1E-4	0.0	1.2E-3	3.7E-4	3.1E-4	3.1E-4
MASS FIRED OVERFEED			1.4E-4	2.9E-5	5.0E-3	3.4E-3	8.6E-3	8.5E-3	8.4E-3	8.4E-3
HIGH			1.8E-3	1.0E-4	2.1E-2	1.4E-2	2.1E-2	2.1E-2	2.1E-2	2.1E-2
LOW			3.8E-6	1.5E-5	1.0E-4	2.9E-3	3.3E-4	6.3E-5	2.3E-6	5.0E-6
CORRELATIONS WITH -										
FLUE GAS OXYGEN, PERCENT			-0.50	-0.06	-0.38	0.36	-0.15			
TOTAL ASH			0.55	0.50	0.05	-0.68	-0.31			
GRATE HEAT RELEASE			0.77	0.27	-0.31	-0.44	-0.45			
HYDROCARBONS			0.04	-0.23	-0.13	-0.17	-0.20			
BOILER EFFICIENCY			0.13	0.24	-0.31	0.11	-0.18			
CARBON MONOXIDE			0.84	0.22	-0.23	-0.27	-0.28			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

IRIDIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - - - - NG/J* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	1.1E-3	3.4E-5	1.1E-4	2.0E-3	3.2E-3	2.3E-3	2.2E-3	2.2E-3
B 31	6.0	2670	1.1E-3	2.9E-5	1.2E-4	2.1E-3	3.3E-3	2.3E-3	2.2E-3	2.2E-3
B 33	6.1	2130	1.0E-3	4.6E-5	1.2E-4	2.2E-3	3.4E-3	2.5E-3	2.3E-3	2.3E-3
C 44	8.9	4380	2.0E-3	2.6E-5	4.7E-5	0.0	2.1E-3	2.4E-4	6.1E-5	5.0E-5
C 45	8.3	4360	1.8E-3	2.1E-5	4.5E-5	5.6E-4	2.4E-3	7.8E-4	6.2E-4	6.1E-4
C 46	9.0	3230	1.6E-3	3.3E-5	2.3E-5	5.9E-4	2.3E-3	7.8E-4	6.3E-4	6.2E-4
AVERAGE			1.4E-3	3.1E-5	7.8E-5	1.3E-3	2.8E-3	1.5E-3	1.3E-3	1.3E-3
HIGH			2.0E-3	4.6E-5	1.2E-4	2.2E-3	3.4E-3	2.5E-3	2.3E-3	2.3E-3
LOW			1.0E-3	2.1E-5	2.3E-5	5.6E-4	2.1E-3	2.4E-4	6.1E-5	5.0E-5

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - - - - NG/J* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	1.5E-4	8.7E-5	0.0	0.0	2.4E-4	5.3E-5	1.7E-6	3.6E-6
E 16	8.3	2760	3.3E-4	3.9E-5	4.0E-5	0.0	4.1E-4	7.2E-5	4.2E-5	4.1E-5
E 17	6.2	2770	2.7E-4	2.7E-5	6.0E-5	0.0	3.6E-4	9.3E-5	6.2E-5	6.1E-5
F 22	6.0	2980	9.1E-4	3.2E-5	2.5E-4	0.0	1.2E-3	3.0E-4	2.6E-4	2.6E-4
F 32	6.8	2890	6.7E-4	3.2E-5	1.6E-4	0.0	8.6E-4	2.0E-4	1.7E-4	1.7E-4
G 15	8.7	3230	2.9E-4	3.2E-5	2.4E-4	0.0	5.7E-4	2.7E-4	2.4E-4	2.4E-4
G 20	9.2	2320	5.1E-4	2.9E-5	3.8E-4	0.0	9.2E-4	4.1E-4	3.8E-4	3.8E-4
H 11	9.4	1980	1.6E-4	7.3E-6	5.5E-4	0.0	7.2E-4	5.6E-4	5.6E-4	5.6E-4
I 09	5.9	2700	1.2E-4	1.7E-5	1.3E-2	0.0	1.3E-2	1.3E-2	1.3E-2	1.3E-2
I 18	7.8	1670	1.6E-4	3.5E-5	1.9E-3	2.1E-3	4.2E-3	4.1E-3	4.0E-3	4.0E-3
J 15	7.9	1550	7.0E-6	1.5E-5	1.4E-3	1.8E-3	3.2E-3	3.2E-3	3.2E-3	3.2E-3
J 16	8.9	2570	3.8E-6	1.6E-5	2.4E-3	2.0E-3	4.4E-3	4.4E-3	4.4E-3	4.4E-3
K 18	9.8	1280	1.2E-4	0.0	2.8E-3	1.4E-2	1.7E-2	1.7E-2	1.7E-2	1.7E-2
AVERAGES										
SPREADER,NO REINJ FROM D.C.			5.0E-4	3.2E-5	1.9E-4	0.0	7.2E-4	2.2E-4	1.9E-4	1.9E-4
MASS FIRED OVERFEED			1.0E-4	2.5E-5	3.1E-3	2.9E-3	6.1E-3	6.0E-3	6.0E-3	6.0E-3
HIGH			9.1E-4	8.7E-5	1.3E-2	1.4E-2	1.7E-2	1.7E-2	1.7E-2	1.7E-2
LOW			3.8E-6	7.3E-6	4.0E-5	1.8E-3	2.4E-4	5.3E-5	1.7E-6	3.6E-6

CORRELATIONS WITH -				
FLUE GAS OXYGEN, PERCENT	-0.43	0.16	-0.35	0.36	0.02
TOTAL ASH	0.54	0.21	-0.02	-0.63	-0.45
GRATE HEAT RELEASE	0.80	-0.10	-0.33	-0.39	-0.46
HYDROCARBONS	-0.02	-0.29	-0.13	-0.14	-0.19
BOILER EFFICIENCY	-0.02	0.17	-0.34	0.09	-0.15
CARBON MONOXIDE	0.75	-0.01	-0.25	-0.23	-0.29

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

PLATINUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - - - - NG/J* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.8	2710	1.8E-3	4.7E-5	1.1E-4	2.0E-2	2.2E-2	2.1E-2	2.0E-2	2.0E-2
B 31	6.0	2670	1.8E-3	3.6E-5	1.2E-4	2.6E-2	2.8E-2	2.7E-2	2.7E-2	2.7E-2
B 33	6.1	2130	1.6E-3	5.8E-5	1.2E-4	5.5E-3	7.4E-3	5.9E-3	5.7E-3	5.7E-3
C 44	8.9	4380	2.0E-3	2.6E-5	4.7E-5	0.0	2.1E-3	2.4E-4	6.1E-5	5.0E-5
C 45	8.3	4360	1.8E-3	2.1E-5	4.5E-5	0.0	1.9E-3	2.2E-4	5.7E-5	4.7E-5
C 46	9.8	3230	1.6E-3	3.3E-5	2.3E-5	0.0	1.7E-3	1.9E-4	3.5E-5	2.6E-5
AVERAGE			1.8E-3	3.7E-5	7.8E-5	8.7E-3	1.1E-2	9.0E-3	8.8E-3	8.8E-3
HIGH			2.0E-3	5.8E-5	1.2E-4	2.6E-2	2.8E-2	2.7E-2	2.7E-2	2.7E-2
LOW			1.6E-3	2.1E-5	2.3E-5	5.5E-3	1.7E-3	1.9E-4	3.5E-5	2.6E-5

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - - - - NG/J* 18.5 µM +5.3 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	2.3E-4	1.6E-4	0.0	0.0	3.9E-4	1.0E-4	2.7E-6	5.9E-6
E 16	8.3	2760	3.3E-4	3.9E-5	4.0E-5	0.0	4.1E-4	7.2E-5	4.2E-5	4.1E-5
E 17	6.2	2770	2.7E-4	2.7E-5	6.0E-5	0.0	3.6E-4	8.3E-5	6.2E-5	6.1E-5
F 22	6.0	2980	9.1E-4	3.2E-5	2.5E-4	0.0	1.2E-3	3.0E-4	2.6E-4	2.6E-4
F 30	6.8	2890	6.7E-4	3.2E-5	1.6E-4	0.0	8.6E-4	2.0E-4	1.7E-4	1.7E-4
G 15	8.7	3230	3.7E-4	5.8E-5	3.4E-4	0.0	7.7E-4	3.8E-4	3.4E-4	3.4E-4
G 20	9.2	2320	5.1E-4	2.9E-5	3.8E-4	0.0	9.2E-4	4.1E-4	3.8E-4	3.8E-4
H 11	9.4	1980	1.6E-4	7.3E-6	5.5E-4	0.0	7.2E-4	5.6E-4	5.6E-4	5.6E-4
I 09	5.9	2700	1.2E-4	1.7E-5	2.1E-2	0.0	2.1E-2	2.1E-2	2.1E-2	2.1E-2
I 18	7.8	1670	1.6E-4	3.5E-5	1.9E-3	7.0E-3	9.1E-3	9.0E-3	9.0E-3	9.0E-3
J 15	7.9	1550	7.0E-6	1.5E-5	1.4E-3	5.9E-3	7.3E-3	7.3E-3	7.3E-3	7.3E-3
J 16	8.9	2570	3.8E-6	1.6E-5	2.4E-3	6.6E-3	9.0E-3	9.0E-3	9.0E-3	9.0E-3
K 18	9.8	1280	1.8E-4	0.0	2.8E-3	1.4E-2	1.7E-2	1.7E-2	1.7E-2	1.7E-2
AVERAGES										
SPREADER, NO REINJ FROM D.C.			5.1E-4	3.6E-5	2.1E-4	0.0	7.5E-4	2.4E-4	2.1E-4	2.1E-4
MASS FIRED OVERFEED			1.2E-4	3.6E-5	4.3E-3	4.8E-3	9.3E-3	9.2E-3	9.1E-3	9.1E-3
HIGH			9.1E-4	1.6E-4	2.1E-2	1.4E-2	2.1E-2	2.1E-2	2.1E-2	2.1E-2
LOW			3.8E-6	7.3E-6	4.0E-5	5.9E-3	3.6E-4	7.2E-5	2.7E-6	5.9E-6
CORRELATIONS WITH -										
FLUE GAS OXYGEN, PERCENT			-0.37	0.33	-0.40	0.34	-0.12			
TOTAL ASH			0.54	0.11	0.06	-0.73	-0.39			
GRATE HEAT RELEASE			0.78	-0.25	-0.27	-0.51	-0.51			
HYDROCARBONS			-0.05	-0.22	-0.12	-0.21	-0.23			
BOILER EFFICIENCY			-0.03	0.14	-0.35	0.16	-0.18			
CARBON MONOXIDE			0.73	-0.08	-0.21	-0.33	-0.36			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

GOLD

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - - - - NG/J* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	3.5E-4	2.1E-5	5.7E-5	5.1E-3	5.5E-3	5.2E-3	5.1E-3	5.1E-3
B 31	6.0	2670	3.5E-4	2.2E-5	5.9E-5	2.1E-3	2.5E-3	2.2E-3	2.2E-3	2.2E-3
B 33	6.1	2130	3.3E-4	3.4E-5	5.9E-5	5.5E-3	6.0E-3	5.7E-3	5.6E-3	5.6E-3
C 44	8.9	4380	6.8E-4	8.5E-6	2.3E-5	0.0	7.1E-4	8.9E-5	2.8E-5	2.4E-5
C 45	8.3	4360	6.0E-4	6.9E-6	2.2E-5	0.0	6.3E-4	8.0E-5	2.7E-5	2.3E-5
C 46	9.0	3230	5.4E-4	1.1E-5	1.2E-5	0.0	5.6E-4	6.8E-5	1.6E-5	1.3E-5
AVERAGE			4.7E-4	1.7E-5	3.9E-5	2.1E-3	2.7E-3	2.2E-3	2.2E-3	2.2E-3
HIGH			6.8E-4	3.4E-5	5.9E-5	5.5E-3	6.0E-3	5.7E-3	5.6E-3	5.6E-3
LOW			3.3E-4	6.9E-6	1.2E-5	2.1E-3	5.6E-4	6.8E-5	1.6E-5	1.3E-5

• • • • • • • • • • • • • • • • • • • STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR •

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - - - - NG/J* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	5.4E-5	3.5E-5	0.0	0.0	8.9E-5	2.1E-5	6.2E-7	1.3E-6
E 16	8.3	2760	2.2E-4	2.6E-5	4.0E-5	0.0	2.8E-4	6.1E-5	4.1E-5	4.1E-5
E 17	6.2	2770	1.8E-4	1.8E-5	4.0E-5	0.0	2.4E-4	5.5E-5	4.1E-5	4.0E-5
F 22	6.0	2980	6.1E-4	2.1E-5	1.3E-4	0.0	7.6E-4	1.6E-4	1.3E-4	1.3E-4
F 30	6.8	2890	4.5E-4	2.1E-5	1.1E-4	0.0	5.7E-4	1.3E-4	1.1E-4	1.1E-4
G 15	8.7	3230	1.5E-4	1.3E-5	1.7E-4	0.0	3.3E-4	1.8E-4	1.7E-4	1.7E-4
G 20	9.2	2320	2.1E-4	1.2E-5	2.3E-4	0.0	4.6E-4	2.4E-4	2.3E-4	2.3E-4
H 11	9.4	1980	1.1E-4	4.9E-6	2.2E-4	0.0	3.3E-4	2.3E-4	2.2E-4	2.2E-4
I 09	5.9	2700	4.7E-5	6.7E-6	8.5E-3	0.0	8.5E-3	8.5E-3	8.5E-3	8.5E-3
I 18	7.8	1670	1.0E-4	1.2E-5	1.1E-3	1.1E-3	2.3E-3	2.2E-3	2.2E-3	2.2E-3
J 15	7.9	1550	2.8E-6	6.1E-6	7.0E-4	8.8E-4	1.6E-3	1.6E-3	1.6E-3	1.6E-3
J 16	8.9	2570	1.5E-6	6.5E-6	1.3E-3	1.0E-3	2.3E-3	2.3E-3	2.3E-3	2.3E-3
K 18	9.8	1260	6.1E-5	0.0	1.4E-3	7.0E-3	8.5E-3	8.4E-3	8.4E-3	8.4E-3
AVERAGES										
SPREADER,NO REINJ FROM D.C.			3.0E-4	1.9E-5	1.2E-4	0.0	4.4E-4	1.4E-4	1.2E-4	1.2E-4
MASS FIRED OVERFEED			5.3E-5	1.0E-5	1.9E-3	1.4E-3	3.4E-3	3.3E-3	3.3E-3	3.3E-3
HIGH			6.1E-4	3.5E-5	8.5E-3	7.0E-3	8.5E-3	8.5E-3	8.5E-3	8.5E-3
LOW			1.5E-6	4.9E-6	4.0E-5	8.8E-4	8.9E-5	2.1E-5	6.2E-7	1.3E-6
CORRELATIONS WITH -										
FLUE GAS OXYGEN, PERCENT			-0.51	-0.07	-0.38	0.36	-0.09			
TOTAL ASH			0.54	0.42	0.03	-0.63	-0.35			
GRATE HEAT RELEASE			0.80	0.19	-0.30	-0.39	-0.43			
HYDROCARBONS			0.02	-0.24	-0.14	-0.14	-0.20			
BOILER EFFICIENCY			0.07	0.32	-0.35	0.09	-0.20			
CARBON MONOXIDE			0.82	0.23	-0.24	-0.23	-0.28			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

MERCURY

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - - - - NG/J* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210					3.4E-4			
A 35	6.8	3140					3.3E-4			
B 30	6.0	2710	1.8E-4	7.1E-5	2.4E-4	1.7E-3	2.2E-3	2.0E-3	1.9E-3	1.9E-3
B 31	6.0	2670	1.8E-4	2.4E-5	1.9E-4	1.4E-3	1.8E-3	1.6E-3	1.6E-3	1.6E-3
B 33	6.1	2130	1.6E-4	3.4E-5	1.3E-4	7.2E-4	1.1E-3	8.9E-4	8.6E-4	8.6E-4
C 44	8.9	4360	3.4E-4	1.2E-5	3.0E-4	6.5E-3	7.2E-3	6.8E-3	6.8E-3	6.8E-3
C 45	8.3	4360	1.8E-4	9.0E-6	1.8E-4	0.0	3.7E-4	2.0E-4	1.8E-4	1.8E-4
C 46	9.0	3230	1.6E-4	1.8E-5	8.1E-4	0.0	1.0E-3	8.3E-4	8.1E-4	8.1E-4
AVERAGE			1.5E-4	2.1E-5	2.3E-4	1.3E-3	1.8E-3	1.6E-3	1.6E-3	1.6E-3
HIGH			3.4E-4	7.1E-5	8.1E-4	6.5E-3	7.2E-3	6.8E-3	6.8E-3	6.8E-3
LOW			1.6E-4	9.0E-6	1.3E-4	7.2E-4	3.3E-4	2.0E-4	1.8E-4	1.8E-4

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - - - - NG/J* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	13.2	2370	3.1E-6	1.7E-6	0.0	0.0	4.8E-6	1.0E-6	3.3E-8	7.1E-8
E 16	8.3	2760	8.8E-5	5.2E-6	4.1E-4	3.6E-4	8.7E-4	7.8E-4	7.7E-4	7.7E-4
E 17	8.2	2770	3.6E-5	3.6E-6	3.8E-4	1.3E-4	5.5E-4	5.2E-4	5.1E-4	5.1E-4
F 22	6.0	2980	2.1E-4	4.7E-5	6.4E-4	2.3E-4	1.1E-3	9.0E-4	8.7E-4	8.7E-4
F 38	6.8	2890	7.1E-4	1.1E-4	5.1E-4	3.7E-4	1.7E-3	1.0E-3	8.9E-4	8.8E-4
G 15	8.7	3230	2.2E-5	1.8E-5	8.6E-5	5.4E-4	6.7E-4	6.4E-4	6.3E-4	6.3E-4
G 20	9.2	2320	3.1E-5	2.0E-5	1.7E-4	2.6E-3	2.8E-3	2.8E-3	2.8E-3	2.8E-3
H 11	9.4	1980	2.6E-5	2.4E-6	5.3E-4	1.7E-4	7.3E-4	7.1E-4	7.0E-4	7.0E-4
I 09	5.9	2700	1.4E-5	8.1E-6	3.8E-7	8.0E-4	8.3E-4	8.1E-4	8.0E-4	8.0E-4
I 16	7.6	1670	1.6E-5	2.4E-5	1.7E-7	2.8E-4	3.2E-4	2.9E-4	2.8E-4	2.8E-4
J 15	7.9	1550	1.4E-6	1.3E-5	7.0E-8	5.3E-4	5.4E-4	5.4E-4	5.3E-4	5.3E-4
J 16	8.9	2570	9.2E-7	3.3E-5	1.3E-7	1.3E-4	1.7E-4	1.7E-4	1.3E-4	1.3E-4
K 18	9.8	1280	6.1E-6	3.9E-6	6.4E-5	8.5E-4	9.2E-4	9.1E-4	9.1E-4	9.1E-4
AVERAGES										
SPREADER,NO REINJ FROM D.C.			1.8E-4	3.3E-5	3.7E-4	7.1E-4	1.3E-3	1.1E-3	1.1E-3	1.1E-3
MASS FIRED OVERFEED			1.0E-5	1.2E-5	8.5E-5	4.0E-4	5.0E-4	4.9E-4	4.8E-4	4.8E-4
HIGH			7.1E-4	1.1E-4	6.4E-4	2.6E-3	2.8E-3	2.8E-3	2.8E-3	2.8E-3
LOW			9.2E-7	1.7E-6	7.0E-8	1.3E-4	4.8E-6	1.0E-6	3.3E-8	7.1E-8
CORRELATIONS WITH -										
FLUE GAS OXYGEN, PERCENT			-0.39	-0.38	-0.37	0.17	-0.09			
TOTAL ASH			0.38	0.38	0.43	-0.09	0.18			
GRATE HEAT RELEASE			0.59	0.56	0.69	0.15	0.55			
HYDROCARBONS			-0.03	-0.13	0.48	-0.19	-0.02			
BOILER EFFICIENCY			0.17	0.12	0.08	-0.37	-0.26			
CARBON MONOXIDE			0.68	0.63	0.80	-0.25	0.24			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

THALLIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - EMISSIONS - - - - NG/J* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210					3.3E-4			
A 35	6.0	3140					3.6E-4			
B 30	6.0	2710	1.1E-3	1.0E-2	8.6E-5	2.0E-3	1.3E-2	9.4E-3	2.2E-3	2.1E-3
B 31	6.0	2670	7.1E-4	1.2E-2	7.9E-5	2.1E-3	1.5E-2	1.1E-2	2.3E-3	2.2E-3
B 33	6.1	2130	6.5E-4	1.3E-2	7.9E-5	2.2E-3	1.6E-2	1.2E-2	2.4E-3	2.3E-3
C 44	8.9	4380	1.4E-3	1.1E-2	2.3E-5	3.5E-3	1.6E-2	1.2E-2	3.6E-3	3.6E-3
C 45	8.3	4360	1.2E-3	2.7E-3	4.5E-5	3.4E-3	7.3E-3	5.5E-3	3.5E-3	3.4E-3
C 46	9.0	3230	5.4E-3	7.4E-3	4.7E-5	3.5E-3	1.6E-2	1.0E-2	3.7E-3	3.6E-3
AVERAGE			1.3E-3	7.0E-3	4.5E-5	2.1E-3	1.1E-2	7.6E-3	2.3E-3	2.2E-3
HIGH			5.4E-3	1.3E-2	8.6E-5	3.5E-3	1.6E-2	1.2E-2	3.7E-3	3.6E-3
LOW			6.5E-4	2.7E-3	2.3E-5	2.0E-3	3.3E-4	3.3E-4	3.3E-4	3.3E-4

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - EMISSIONS - - - - NG/J* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	2.3E-3	5.9E-2	0.0	0.0	6.1E-2	3.2E-2	4.3E-4	9.2E-4
E 16	8.3	2760	3.3E-3	7.8E-3	1.8E-4	0.0	1.1E-2	4.6E-3	2.6E-4	2.2E-4
E 17	6.2	2770	5.5E-3	5.4E-3	6.0E-5	0.0	1.1E-2	3.2E-3	1.4E-4	1.0E-4
F 22	6.0	2980	6.1E-3	1.1E-3	2.5E-4	0.0	7.4E-3	1.0E-3	3.0E-4	2.8E-4
F 30	6.8	2690	4.5E-3	6.4E-4	2.7E-4	0.0	5.4E-3	7.6E-4	3.1E-4	2.9E-4
G 15	8.7	3230	5.2E-3	1.9E-2	3.4E-4	0.0	2.5E-2	1.1E-2	5.1E-4	4.4E-4
G 20	9.2	2320	3.1E-3	1.8E-4	7.6E-4	0.0	4.0E-3	1.0E-3	7.8E-4	7.7E-4
H 11	9.4	1980	2.1E-2	7.3E-3	5.5E-4	0.0	2.9E-2	5.3E-3	7.5E-4	1.0E-3
I 09	5.9	2700	1.6E-2	3.4E-2	1.7E-2	0.0	6.7E-2	3.5E-2	1.7E-2	1.8E-2
I 18	7.8	1670	2.3E-3	5.8E-2	2.2E-3	3.5E-3	6.6E-2	3.8E-2	6.1E-3	6.6E-3
J 15	7.9	1550	2.8E-4	3.1E-2	1.6E-3	2.9E-3	3.6E-2	3.6E-2	4.8E-3	5.0E-3
J 16	8.9	2570	1.5E-4	3.2E-2	2.6E-3	3.3E-3	3.9E-2	3.9E-2	6.2E-3	6.4E-3
K 18	9.8	1280	6.1E-4	0.0	5.6E-3	2.8E-2	3.4E-2	3.4E-2	3.4E-2	3.4E-2
AVERAGES										
SPREADER, NO REINJ FROM D.C.			4.6E-3	5.8E-3	3.1E-4	0.0	1.1E-2	3.6E-3	3.8E-4	3.5E-4
MASS FIRED OVERFEED			6.2E-3	3.2E-2	4.2E-3	5.4E-3	4.7E-2	3.1E-2	1.0E-2	1.0E-2
HIGH			2.1E-2	5.9E-2	1.7E-2	2.8E-2	6.7E-2	3.9E-2	3.4E-2	3.4E-2
LOW			1.5E-4	1.8E-4	6.0E-5	2.9E-3	4.0E-3	7.6E-4	1.4E-4	1.0E-4
CORRELATIONS WITH -										
FLUE GAS OXYGEN, PERCENT			-0.22	0.17	-0.31	0.36	0.16			
TOTAL ASH			0.18	-0.29	-0.07	-0.62	-0.44			
GRATE HEAT RELEASE			0.06	-0.67	-0.34	-0.38	-0.80			
HYDROCARBONS			0.75	-0.22	-0.15	-0.14	-0.08			
BOILER EFFICIENCY			-0.55	-0.04	-0.33	0.08	-0.23			
CARBON MONOXIDE			0.32	-0.41	-0.26	-0.22	-0.42			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

XVB 4-15918-564

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - - - - NG/J* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210					1.3E-2			
A 35	6.0	3140					1.5E-2			
B 30	6.0	2710	3.5E-3	2.4E-1	8.6E-4	5.1E-3	2.5E-1	1.9E-1	7.7E-3	6.3E-3
B 31	6.0	2670	3.5E-3	2.9E-1	8.7E-4	5.3E-3	3.0E-1	2.2E-1	8.2E-3	6.6E-3
B 33	6.1	2130	6.5E-3	3.5E-1	8.6E-4	5.5E-3	3.7E-1	2.7E-1	8.9E-3	7.0E-3
C 44	8.9	4380	4.7E-2	9.2E-2	4.7E-4	0.0	1.4E-1	7.4E-2	1.4E-3	6.8E-4
C 45	8.3	4360	6.0E-3	5.0E-2	1.8E-4	0.0	5.6E-2	3.8E-2	5.7E-4	2.6E-4
C 46	9.0	3230	5.4E-2	4.9E-2	2.1E-4	0.0	1.0E-1	4.1E-2	9.3E-4	3.6E-4
AVERAGE			1.5E-2	1.3E-1	4.3E-4	2.0E-3	1.6E-1	1.1E-1	7.0E-3	6.2E-3
HIGH			5.4E-2	3.5E-1	8.7E-4	5.5E-3	3.7E-1	2.7E-1	1.5E-2	1.5E-2
LOW			3.5E-3	4.9E-2	1.8E-4	5.1E-3	1.3E-2	1.3E-2	5.7E-4	2.6E-4

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - - - - NG/J* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2670	7.7E-3	2.3E-1	0.0	0.0	2.4E-1	1.3E-1	1.7E-3	3.6E-3
E 16	8.3	2760	6.6E-3	3.9E-2	1.8E-3	0.0	4.8E-2	2.4E-2	2.1E-3	2.0E-3
E 17	6.2	2770	1.8E-2	2.7E-2	6.0E-5	0.0	4.5E-2	1.6E-2	3.8E-4	2.4E-4
F 22	6.0	2980	1.8E-2	1.1E-1	6.3E-4	0.0	1.3E-1	6.0E-2	1.5E-3	1.1E-3
F 30	6.8	2830	4.5E-3	6.4E-2	1.1E-4	0.0	6.8E-2	3.5E-2	5.8E-4	3.8E-4
G 15	8.7	3230	7.4E-2	6.5E-2	3.4E-3	0.0	1.4E-1	4.1E-2	4.4E-3	4.0E-3
G 20	9.2	2320	3.1E-2	4.1E-2	3.8E-3	0.0	7.6E-2	2.7E-2	4.3E-3	4.1E-3
H 11	9.4	1980	1.1E-1	1.5E-3	2.2E-3	0.0	1.1E-1	6.4E-3	3.0E-3	3.8E-3
I 09	5.9	2700	2.4E-2	1.0E-1	2.1E-2	0.0	1.5E-1	7.8E-2	2.2E-2	2.3E-2
I 18	7.8	1670	5.6E-3	2.3E-1	5.6E-3	1.1E-5	2.4E-1	1.3E-1	7.2E-3	9.1E-3
J 15	7.9	1550	1.0E-2	6.1E-1	4.7E-3	1.8E-3	6.3E-1	6.3E-1	1.1E-2	1.6E-2
J 16	8.9	2570	2.3E-3	6.5E-1	5.3E-3	3.3E-3	6.6E-1	6.6E-1	1.3E-2	1.8E-2
K 18	9.8	1280	2.4E-3	0.0	2.8E-3	1.4E-2	1.9E-2	1.7E-2	1.7E-2	1.7E-2
AVERAGES										
SPREADER,NO REINJ FROM D.C.			2.5E-2	5.7E-2	1.6E-3	0.0	8.4E-2	3.4E-2	2.2E-3	2.8E-3
MASS FIRED OVERFEED			2.2E-2	2.6E-1	6.0E-3	2.7E-3	2.9E-1	2.4E-1	1.1E-2	1.3E-2
HIGH			1.1E-1	6.5E-1	2.1E-2	1.4E-2	6.6E-1	6.6E-1	2.2E-2	2.3E-2
LOW			2.3E-3	1.5E-3	6.0E-5	1.1E-5	1.9E-2	6.4E-3	3.8E-4	2.4E-4
CORRELATIONS WITH -										
FLUE GAS OXYGEN, PERCENT			0.20	0.18	-0.32	0.38	0.13			
TOTAL ASH			0.16	-0.24	0.01	-0.56	-0.24			
GRATE HEAT RELEASE			0.20	-0.42	-0.29	-0.38	-0.42			
HYDROCARBONS			0.78	-0.25	-0.13	-0.13	-0.15			
BOILER EFFICIENCY			-0.60	0.47	-0.44	0.16	0.39			
CARBON MONOXIDE			0.19	-0.25	-0.33	-0.22	-0.24			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15918-564

BISMUTH

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - - - - NG/J* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210					1.0E-2			
A 35	6.0	3140					9.1E-3			
B 30	6.0	2710	3.5E-4	4.8E-3	5.7E-5	2.0E-3	7.2E-3	5.7E-3	2.1E-3	2.1E-3
B 31	6.0	2670	3.5E-4	5.8E-3	5.9E-5	2.1E-3	8.4E-3	6.6E-3	2.2E-3	2.2E-3
B 33	6.1	2130	6.5E-4	8.9E-3	5.9E-5	2.2E-3	1.2E-2	9.0E-3	2.3E-3	2.3E-3
C 44	8.9	4380	6.8E-4	1.0E-3	1.2E-5	0.0	1.7E-3	8.1E-4	2.3E-5	1.4E-5
C 45	8.3	4360	1.2E-3	5.4E-4	1.1E-5	0.0	1.7E-3	5.2E-4	2.3E-5	1.4E-5
C 46	9.0	3230	5.4E-4	4.4E-4	1.2E-5	0.0	1.0E-3	3.9E-4	1.9E-5	1.3E-5
AVERAGE			4.7E-4	2.7E-3	2.6E-5	8.0E-4	6.4E-3	5.3E-3	3.3E-3	3.2E-3
HIGH			1.2E-3	8.9E-3	5.9E-5	2.2E-3	1.2E-2	1.0E-2	1.0E-2	1.0E-2
LOW			3.5E-4	4.4E-4	1.1E-5	2.0E-3	1.0E-3	3.9E-4	1.9E-5	1.3E-5

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - - - - NG/J* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	2.3E-4	6.8E-3	0.0	0.0	9.0E-3	4.8E-3	6.3E-5	1.4E-4
E 16	8.3	2760	1.1E-4	3.9E-4	1.8E-5	0.0	5.2E-4	2.4E-4	2.1E-5	2.0E-5
E 17	6.2	2770	9.1E-5	9.0E-5	4.0E-5	0.0	2.2E-4	9.2E-5	4.1E-5	4.0E-5
F 22	6.0	2980	3.0E-4	3.2E-4	2.5E-4	0.0	8.8E-4	4.4E-4	2.6E-4	2.6E-4
F 32	6.8	2890	6.7E-4	1.1E-4	6.1E-5	0.0	8.5E-4	1.6E-4	8.7E-5	8.4E-5
G 15	8.7	3230	3.7E-4	1.3E-3	1.7E-4	0.0	1.8E-3	9.0E-4	1.8E-4	1.8E-4
G 23	9.2	2320	5.1E-4	1.2E-3	1.5E-4	0.0	1.8E-3	8.1E-4	1.6E-4	1.6E-4
H 11	8.4	1980	4.8E-4	1.5E-4	2.2E-4	0.0	8.4E-4	3.2E-4	2.3E-4	2.3E-4
I 09	5.9	2700	1.9E-4	2.7E-4	8.5E-3	0.0	8.9E-3	8.6E-3	8.5E-3	8.5E-3
I 18	7.8	1670	6.5E-5	1.2E-3	1.1E-3	1.1E-3	3.4E-3	2.8E-3	2.2E-3	2.2E-3
J 15	7.9	1550	1.1E-5	1.5E-3	7.0E-4	8.8E-4	3.1E-3	3.1E-3	1.6E-3	1.6E-3
J 16	8.9	2570	1.5E-6	6.5E-4	1.3E-3	1.0E-3	3.0E-3	3.0E-3	2.3E-3	2.3E-3
K 18	9.8	1240	1.2E-4	0.0	1.4E-3	7.0E-3	8.6E-3	8.4E-3	8.4E-3	8.4E-3
AVERAGES										
SPREADER, NO REINJ FROM D.C.			3.4E-4	5.6E-4	1.2E-4	0.0	1.0E-3	4.4E-4	1.3E-4	1.2E-4
MASS FIRED OVERFEED			1.6E-4	1.8E-3	1.9E-3	1.4E-3	5.3E-3	4.4E-3	3.3E-3	3.3E-3
HIGH			6.7E-4	8.8E-3	8.5E-3	7.0E-3	9.0E-3	8.6E-3	8.5E-3	8.5E-3
LOW			1.5E-6	9.0E-5	1.8E-5	8.8E-4	2.2E-4	9.2E-5	2.1E-5	2.0E-5
CORRELATIONS WITH -										
FLUE GAS OXYGEN, PERCENT			0.01	0.47	-0.39	0.36	0.28			
TOTAL ASH			0.35	-0.18	0.03	-0.63	-0.45			
GRATE HEAT RELEASE			0.55	-0.51	-0.29	-0.39	-0.75			
HYDROCARBONS			0.38	-0.16	-0.13	-0.14	-0.27			
BOILER EFFICIENCY			-0.39	0.21	-0.34	0.09	-0.06			
CARBON MONOXIDE			0.59	-0.18	-0.22	-0.23	-0.38			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

THORIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - EMISSIONS - - - - NG/J* 10 μM + 3 μM CYCLONE	1 μM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	7.0E-4	3.2E-4	5.7E-5	2.0E-3	3.1E-3	2.4E-3	2.1E-3	2.1E-3
B 31	6.0	2670	1.4E-3	3.4E-4	5.9E-5	2.1E-3	3.9E-3	2.6E-3	2.2E-3	2.2E-3
B 33	6.1	2130	3.3E-3	1.4E-3	5.9E-5	2.2E-3	6.9E-3	3.6E-3	2.3E-3	2.3E-3
C 44	8.9	4380	1.4E-2	8.1E-4	2.3E-5	0.0	1.4E-2	1.8E-3	1.2E-4	4.5E-5
C 45	8.3	4360	1.2E-2	6.1E-4	2.2E-5	0.0	1.3E-2	1.5E-3	1.1E-4	4.1E-5
C 46	9.0	3230	5.4E-3	3.7E-4	2.3E-5	0.0	5.8E-3	7.8E-4	6.4E-5	3.2E-5
AVERAGE			6.0E-3	6.4E-4	4.1E-5	1.1E-3	7.8E-3	2.1E-3	1.1E-3	1.1E-3
HIGH			1.4E-2	1.4E-3	5.9E-5	2.2E-3	1.4E-2	3.6E-3	2.3E-3	2.3E-3
LOW			7.0E-4	3.2E-4	2.2E-5	2.0E-3	3.1E-3	7.8E-4	6.4E-5	3.2E-5

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - EMISSIONS - - - - NG/J* 18.5 μM +5.9 μM CYCLONE	1.4 μM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	7.7E-4	3.5E-4	0.0	0.0	1.1E-3	2.2E-4	7.8E-6	1.7E-5
E 16	8.3	2760	4.4E-3	3.9E-4	4.0E-5	0.0	4.8E-3	4.0E-4	7.3E-5	5.9E-5
E 17	6.2	2770	1.8E-3	2.7E-3	6.0E-5	0.0	4.6E-3	1.6E-3	9.1E-5	7.8E-5
F 22	6.0	2980	1.2E-2	3.2E-4	2.5E-4	0.0	1.3E-2	8.2E-4	3.4E-4	3.0E-4
F 33	6.8	2890	6.7E-3	2.1E-4	1.4E-4	0.0	7.0E-3	4.7E-4	1.8E-4	1.6E-4
G 15	8.7	3230	7.4E-3	3.2E-4	3.4E-4	0.0	8.0E-3	7.5E-4	3.9E-4	3.7E-4
G 20	9.2	2320	5.1E-3	1.8E-3	3.1E-4	0.0	7.2E-3	1.4E-3	3.5E-4	3.3E-4
H 11	9.4	1980	2.1E-3	1.0E-4	5.5E-4	0.0	2.8E-3	6.8E-4	5.7E-4	5.9E-4
I 09	5.9	2700	4.7E-3	1.7E-4	1.7E-2	0.0	2.2E-2	1.7E-2	1.7E-2	1.7E-2
I 18	7.8	1670	3.3E-3	1.7E-4	2.2E-3	2.1E-3	7.8E-3	4.5E-3	4.3E-3	4.4E-3
J 15	7.9	1550	7.0E-4	1.5E-4	1.6E-3	1.8E-3	4.3E-3	4.3E-3	3.4E-3	3.4E-3
J 16	8.9	2570	3.8E-4	1.6E-4	2.6E-3	2.0E-3	5.2E-3	5.2E-3	4.6E-3	4.6E-3
K 18	9.8	1280	3.0E-4	0.0	2.8E-3	1.4E-2	1.7E-2	1.7E-2	1.7E-2	1.7E-2
AVERAGES										
SPREADER,NO REINJ FROM D.C.			6.3E-3	1.0E-3	1.9E-4	0.0	7.4E-3	9.1E-4	2.4E-4	2.2E-4
MASS FIRED OVERFEED			1.7E-3	1.6E-4	3.8E-3	2.9E-3	8.6E-3	7.0E-3	6.7E-3	6.7E-3
HIGH			1.2E-2	2.7E-3	1.7E-2	1.4E-2	2.2E-2	1.7E-2	1.7E-2	1.7E-2
LOW			3.8E-4	1.0E-4	4.0E-5	1.8E-3	1.1E-3	2.2E-4	7.8E-6	1.7E-5
CORRELATIONS WITH -										
FLUE GAS OXYGEN, PERCENT			-0.53	-0.23	-0.18	0.36	-0.40			
TOTAL ASH			0.67	0.25	0.02	-0.63	0.03			
GRATE HEAT RELEASE			0.78	0.37	-0.30	-0.39	0.02			
HYDROCARBONS			-0.84	-0.18	-0.13	-0.14	-0.24			
BOILER EFFICIENCY			-0.29	0.16	-0.34	0.09	-0.35			
CARBON MONOXIDE			0.64	-0.21	-0.24	-0.23	0.02			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15918-564

URANIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - EMISSIONS - - - - NG/J* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 33	6.0	2710	7.0E-4	1.1E-3	5.7E-5	2.0E-3	3.9E-3	3.0E-3	2.1E-3	2.1E-3
B 31	6.0	2670	1.4E-3	2.3E-3	5.9E-5	2.1E-3	5.9E-3	4.0E-3	2.2E-3	2.2E-3
B 33	6.1	2130	3.3E-3	5.6E-3	5.9E-5	2.2E-3	1.1E-2	6.8E-3	2.3E-3	2.3E-3
C 44	8.9	4380	1.4E-2	1.0E-3	2.3E-5	0.0	1.5E-2	1.9E-3	1.2E-4	4.5E-5
C 45	8.3	4360	6.0E-3	6.7E-4	2.2E-5	0.0	6.7E-3	1.0E-3	6.9E-5	3.2E-5
C 46	9.0	3230	5.4E-3	6.4E-4	2.3E-5	0.0	6.1E-3	1.8E-3	6.6E-5	3.2E-5
AVERAGE			5.0E-3	1.9E-3	4.1E-5	1.1E-3	8.0E-3	3.0E-3	1.2E-3	1.1E-3
HIGH			1.4E-2	5.6E-3	5.9E-5	2.2E-3	1.5E-2	6.8E-3	2.3E-3	2.3E-3
LOW			7.0E-4	6.4E-4	2.2E-5	2.0E-3	3.9E-3	1.0E-3	6.6E-5	3.2E-5

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - EMISSIONS - - - - NG/J* 10.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	1.5E-3	3.2E-3	0.0	0.0	4.8E-3	1.8E-3	3.3E-5	7.2E-5
E 16	8.3	2760	4.4E-3	5.2E-3	1.8E-5	0.0	1.0E-2	3.0E-3	8.5E-5	5.6E-5
E 17	6.2	2770	1.8E-3	3.6E-3	2.0E-5	0.0	5.5E-3	2.1E-3	5.8E-5	4.2E-5
F 22	6.0	2980	1.2E-2	3.2E-3	1.3E-4	0.0	1.5E-2	2.3E-3	2.3E-4	1.9E-4
F 33	6.8	2830	6.7E-3	4.2E-4	5.4E-5	0.0	7.2E-3	5.0E-4	1.0E-4	8.3E-5
G 15	8.7	3210	3.7E-3	3.2E-3	1.7E-4	0.0	7.1E-3	2.1E-3	2.2E-4	2.0E-4
G 20	9.2	2320	5.1E-3	1.2E-2	1.5E-4	0.0	1.7E-2	6.8E-3	2.7E-4	2.2E-4
H 11	9.4	1940	2.1E-3	7.3E-4	2.2E-4	0.0	3.1E-3	6.9E-4	2.4E-4	2.6E-4
I 09	9.9	2730	4.7E-3	1.0E-3	8.5E-3	0.0	1.4E-2	9.2E-3	8.5E-3	8.6E-3
I 18	7.8	1670	1.0E-2	1.7E-3	1.1E-3	1.1E-3	1.4E-2	3.4E-3	2.2E-3	2.3E-3
J 15	7.9	1550	2.8E-4	1.5E-3	7.0E-4	8.8E-4	3.4E-3	3.4E-3	1.6E-3	1.6E-3
J 16	8.9	2570	3.8E-4	1.0E-3	1.3E-3	1.0E-3	3.7E-3	3.7E-3	2.3E-3	2.3E-3
K 16	9.8	1260	3.0E-4	0.0	1.4E-3	7.0E-3	8.7E-3	8.5E-3	8.4E-3	8.5E-3
AVERAGES										
SPREADER,NO REINJ FROM D.C.			5.6E-3	4.6E-3	9.0E-5	0.0	1.0E-2	2.8E-3	1.6E-4	1.3E-4
MASS FIRED OVERFEED			2.7E-3	1.3E-3	1.9E-3	1.4E-3	7.4E-3	4.4E-3	3.3E-3	3.4E-3
HIGH			1.2E-2	1.2E-2	8.5E-3	7.0E-3	1.7E-2	9.2E-3	8.5E-3	8.6E-3
LOW			2.8E-4	4.2E-4	1.8E-5	8.8E-4	3.1E-3	5.0E-4	3.3E-5	4.2E-5

CORRELATIONS WITH -					
FLUE GAS OXYGEN, PERCENT	-0.53	0.14	-0.38	0.36	-0.34
TOTAL ASH	0.35	0.21	0.03	-0.63	0.16
GRATE HEAT RELEASE	0.52	0.30	-0.38	-0.39	0.29
HYDROCARBONS	-0.06	-0.21	-0.13	-0.14	-0.29
BOILER EFFICIENCY	-0.33	-0.15	-0.34	0.09	-0.47
CARBON MONOXIDE	0.57	-0.20	-0.24	-0.23	0.10

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15918-564

PHENANTHRENE

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	EMISSIONS NG/J: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
A 27	4.2	20.0	14500	3.1E-5	5.9E-4	1.8E-5	3.7E-5	1.1E-3	1.8E-3	1.6E-3	1.2E-3	1.2E-3
A 40	6.9	28.0	14300	0.0	1.6E-4	1.9E-5	4.7E-7	1.2E-4	3.0E-4	2.6E-4	1.4E-4	1.4E-4
B 33	6.0	10.0	10600	1.2E-3	3.1E-5	1.1E-4	5.5E-3	8.0E-5	6.9E-3	5.8E-3	5.7E-3	5.7E-3
B 31	6.0	9.0	11200	1.0E-3	4.0E-5	1.0E-4	4.4E-4	1.0E-4	1.6E-3	7.5E-4	6.5E-4	6.4E-4
B 33	6.1	8.0	11100	1.0E-3	1.1E-4	8.2E-5	5.1E-3	0.0	6.3E-3	5.4E-3	5.2E-3	5.2E-3
C 44	8.9	16.0	15000	1.2E-5	1.2E-5	2.1E-5	4.0E-3	2.6E-5	4.0E-3	4.0E-3	4.0E-3	4.0E-3
C 45	8.3	15.0	14500	1.1E-5	1.1E-5	2.5E-5	8.5E-3	1.3E-5	8.6E-3	8.5E-3	8.5E-3	8.5E-3
C 46	9.0	16.0	11900	1.4E-5	1.2E-5	1.6E-5	7.0E-4	3.5E-5	7.8E-4	7.6E-4	7.5E-4	7.5E-4
AVERAGE				4.0E-4	1.2E-4	4.9E-5	3.0E-3	1.9E-4	3.6E-3	3.4E-3	3.3E-3	3.3E-3
HIGH				1.2E-3	5.9E-4	1.1E-4	8.5E-3	1.1E-3	8.6E-3	8.5E-3	8.5E-3	8.5E-3
LOW				1.1E-5	1.1E-5	1.6E-5	4.7E-7	1.3E-5	3.0E-4	2.6E-4	1.4E-4	1.4E-4

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	EMISSIONS NG/J: 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	4.1	12000	1.5E-5	1.8E-5	0.0	2.9E-2	3.2E-4	3.0E-2	3.0E-2	3.0E-2	3.0E-2
E 16	8.3	13.5	11700	2.0E-5	5.1E-5	1.0E-5	5.1E-4	3.0E-5	9.2E-4	8.8E-4	8.5E-4	8.5E-4
E 17	9.2	12.4	11600	3.6E-5	3.2E-5	1.0E-5	8.7E-4	1.2E-5	1.0E-3	9.1E-4	9.0E-4	8.9E-4
F 22	6.0	10.9	7400	3.2E-5	7.0E-5	1.2E-4	1.4E-4	6.3E-5	4.2E-4	3.6E-4	3.2E-4	3.2E-4
F 30	6.8	12.3	8000	3.3E-5	3.8E-5	1.4E-5	1.0E-2	1.4E-5	1.0E-2	1.0E-2	1.0E-2	1.0E-2
G 15	8.7	15.2	11900	1.3E-5	1.5E-5	1.3E-5	2.0E-4	6.8E-5	3.1E-4	2.9E-4	2.8E-4	2.8E-4
G 20	9.2	9.6	12200	1.3E-5	1.8E-5	1.3E-5	7.5E-5	5.4E-5	1.7E-4	1.5E-4	1.4E-4	1.4E-4
H 11	9.4	6.8	13500	2.8E-5	1.1E-5	1.4E-5	1.7E-5	3.0E-5	1.0E-4	6.8E-5	6.1E-5	6.2E-5
I 09	5.9	10.1	12300	1.3E-5	1.1E-5	1.1E-5	1.5E-4	9.3E-5	2.8E-4	2.7E-4	2.6E-4	2.6E-4
I 18	7.8	4.7	12100	1.4E-5	1.4E-5	1.4E-5	2.1E-4	4.7E-5	3.0E-4	2.8E-4	2.7E-4	2.7E-4
J 15	7.9	3.0	12200	1.2E-5	2.3E-5	1.2E-5	1.3E-3	3.7E-5	1.3E-3	1.3E-3	1.3E-3	1.3E-3
J 16	8.9	8.2	12600	1.3E-5	1.3E-5	1.3E-5	6.8E-4	4.5E-5	6.9E-4	6.9E-4	6.6E-4	6.6E-4
K 18	9.8	6.0	12200	0.0	3.6E-5	0.0	1.0E-4	1.7E-5	1.5E-4	1.3E-4	1.1E-4	1.1E-4
AVERAGES												
SPREADER, NO REINJ FROM D.C.				2.4E-5	3.7E-5	3.0E-5	2.0E-3	4.8E-5	2.2E-3	2.1E-3	2.1E-3	2.1E-3
MASS FIRED OVERFEED				1.3E-5	1.8E-5	9.0E-6	4.5E-3	8.5E-5	4.6E-3	4.6E-3	4.6E-3	4.6E-3
HIGH				3.6E-5	7.0E-5	1.2E-4	2.9E-2	3.2E-4	3.0E-2	3.0E-2	3.0E-2	3.0E-2
LOW				1.2E-5	1.1E-5	1.0E-5	1.7E-5	1.2E-5	1.0E-4	6.8E-5	6.1E-5	6.2E-5
CORRELATIONS WITH -												
FLUE GAS OXYGEN, PERCENT				-0.57	-0.38	-0.48	0.33	0.35	0.32			
COAL FINES, PERCENT				0.43	0.35	0.20	-0.29	-0.33	-0.29			
COAL VOLATILES				-0.55	-0.76	-0.70	-0.12	0.09	-0.12			
GRATE HEAT RELEASE				0.64	0.50	0.49	-0.35	-0.49	-0.35			
HYDROCARBONS				0.34	-0.16	0.09	-0.13	-0.13	-0.13			
BOILER EFFICIENCY				0.20	0.43	0.07	0.32	0.07	0.32			
CARBON MONOXIDE				0.66	0.55	0.73	0.06	-0.11	0.07			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

ANTHRACENE

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	*- - - EMISSIONS - - - - NG/J - - - - -* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	10.0	10600	0.0	1.0E-5	0.0	9.4E-5	1.8E-5	1.2E-4	1.2E-4	1.1E-4	1.1E-4
B 31	6.0	9.0	11200	0.0	0.0	1.0E-5	5.1E-5	1.6E-5	7.7E-5	7.7E-5	7.7E-5	7.7E-5
B 33	6.1	8.0	11100	0.0	0.0	1.0E-5	1.0E-4	0.0	1.1E-4	1.1E-4	1.1E-4	1.1E-4
C 44	8.9	16.0	15000	0.0	0.0	0.0	2.7E-4	0.0	2.7E-4	2.7E-4	2.7E-4	2.7E-4
C 45	8.3	15.0	14500	0.0	0.0	0.0	1.6E-5	0.0	1.6E-5	1.6E-5	1.6E-5	1.6E-5
C 46	9.0	16.0	11900	0.0	0.0	0.0	1.1E-4	1.2E-5	1.2E-4	1.2E-4	1.2E-4	1.2E-4
AVERAGE				0.0	1.7E-6	3.3E-6	1.1E-4	7.6E-6	1.2E-4	1.2E-4	1.2E-4	1.2E-4
HIGH					1.0E-5	1.0E-5	2.7E-4	1.8E-5	2.7E-4	2.7E-4	2.7E-4	2.7E-4
LOW					1.0E-5	1.0E-5	1.6E-5	1.2E-5	1.6E-5	1.6E-5	1.6E-5	1.6E-5

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	*- - - EMISSIONS - - - - NG/J - - - - -* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	4.1	12000	1.5E-5	1.5E-5	0.0	2.9E-2	1.8E-5	2.9E-2	2.9E-2	2.9E-2	2.9E-2
E 16	8.3	13.5	11700	2.0E-5	2.0E-5	1.0E-5	2.0E-5	1.0E-5	7.9E-5	5.1E-5	4.0E-5	4.0E-5
E 17	6.2	12.4	11600	2.0E-5	2.0E-5	1.0E-5	1.8E-5	1.0E-5	7.7E-5	4.9E-5	3.8E-5	3.8E-5
F 22	6.0	10.9	7430	3.2E-5	3.2E-5	0.0	5.4E-5	1.6E-5	1.3E-4	8.6E-5	7.0E-5	7.0E-5
F 30	6.8	12.3	8000	2.7E-5	2.7E-5	1.4E-5	0.0	1.4E-5	8.1E-5	4.3E-5	2.7E-5	2.7E-5
G 15	8.7	15.2	11900	0.0	0.0	0.0	3.3E-5	1.3E-5	4.5E-5	4.5E-5	4.5E-5	4.5E-5
G 20	9.2	9.6	12200	0.0	1.3E-5	0.0	2.1E-5	1.3E-5	4.7E-5	4.1E-5	3.4E-5	3.4E-5
H 11	9.4	6.8	13500	2.8E-5	1.4E-5	1.4E-5	1.4E-5	1.4E-5	8.3E-5	5.0E-5	4.2E-5	4.2E-5
I 09	5.9	10.1	12300	0.0	0.0	0.0	3.2E-5	1.1E-5	4.2E-5	4.2E-5	4.2E-5	4.2E-5
I 18	7.8	4.7	12100	0.0	0.0	0.0	5.3E-5	1.4E-5	6.7E-5	6.7E-5	6.7E-5	6.7E-5
J 15	7.9	3.0	12200	1.2E-5	1.2E-5	0.0	9.1E-5	1.9E-5	1.3E-4	1.3E-4	1.1E-4	1.1E-4
J 16	8.9	8.2	12600	0.0	0.0	0.0	1.4E-4	1.3E-5	1.5E-4	1.5E-4	1.5E-4	1.5E-4
K 18	9.8	6.0	12200	0.0	1.4E-5	0.0	1.7E-5	0.0	3.1E-5	2.4E-5	1.7E-5	1.7E-5
AVERAGES												
SPREADER, NO REINJ FROM D.C.				1.6E-5	1.9E-5	5.6E-6	2.4E-5	1.2E-5	7.7E-5	5.3E-5	4.2E-5	4.2E-5
MASS FIRED OVERFEED				7.7E-6	7.7E-6	2.0E-6	4.2E-3	1.3E-5	4.3E-3	4.3E-3	4.2E-3	4.2E-3
HIGH				3.2E-5	3.2E-5	1.4E-5	2.9E-2	1.9E-5	2.9E-2	2.9E-2	2.9E-2	2.9E-2
LOW				1.2E-5	1.2E-5	1.0E-5	1.4E-5	1.0E-5	3.1E-5	2.4E-5	1.7E-5	1.7E-5

CORRELATIONS WITH -						
FLUE GAS OXYGEN, PERCENT	-0.31	-0.26	-0.15	0.43	-0.11	0.43
COAL FINES, PERCENT	0.18	0.21	0.35	-0.38	-0.21	-0.38
COAL VOLATILES	-0.58	-0.72	-0.14	0.08	-0.18	0.07
GRATE HEAT RELEASE	0.42	0.48	0.37	-0.51	0.05	-0.50
HYDROCARBONS	0.47	0.13	0.53	-0.10	0.12	-0.10
BOILER EFFICIENCY	0.36	0.48	0.09	0.24	0.15	0.24
CARBON MONOXIDE	0.79	0.70	0.39	-0.09	0.28	-0.09

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

METHYLANTHRACENES/PHENANTHRENES

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	EMISSIONS NG/J: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
A 27	4.2	20.0	14500	0.0	7.2E-5	0.0	2.3E-6	1.0E-4	1.7E-4	1.6E-4	1.0E-4	1.0E-4
A 43	6.9	28.0	14300	0.0	2.3E-5	3.3E-5	0.0	3.2E-5	8.7E-5	8.2E-5	6.5E-5	6.5E-5
B 30	6.0	10.0	10600	2.7E-4	1.0E-5	1.0E-5	0.0	0.0	2.9E-4	4.1E-5	1.2E-5	1.1E-5
B 31	6.0	9.0	11200	1.6E-4	0.0	5.1E-5	3.4E-5	2.0E-5	2.6E-4	1.2E-4	1.1E-4	1.1E-4
B 33	6.1	8.0	11100	1.5E-4	0.0	2.9E-5	0.0	0.0	1.7E-4	4.2E-5	3.0E-5	3.0E-5
C 44	8.9	16.0	15000	0.0	0.0	1.2E-5	7.9E-4	1.2E-5	8.1E-4	8.1E-4	8.1E-4	8.1E-4
C 45	8.3	15.0	14500	0.0	0.0	2.5E-5	0.0	0.0	2.5E-5	2.5E-5	2.5E-5	2.5E-5
C 46	9.8	16.0	11900	0.0	0.0	1.2E-5	3.0E-4	1.6E-5	3.3E-4	3.3E-4	3.3E-4	3.3E-4
AVERAGE				7.1E-5	1.3E-5	2.2E-5	1.4E-4	2.2E-5	2.7E-4	2.0E-4	1.8E-4	1.8E-4
HIGH				2.7E-4	7.2E-5	5.1E-5	7.9E-4	1.0E-4	8.1E-4	8.1E-4	8.1E-4	8.1E-4
LOW				1.5E-4	1.0E-5	1.0E-5	2.3E-6	1.2E-5	2.5E-5	2.5E-5	1.2E-5	1.1E-5

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	EMISSIONS NG/J: 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	4.1	12000	0.0	0.0	0.0	1.0E-3	1.8E-4	1.1E-3	1.1E-3	1.1E-3	1.1E-3
E 16	8.3	13.5	11700	0.0	2.4E-5	1.0E-5	2.2E-4	1.8E-5	2.7E-4	2.6E-4	2.5E-4	2.5E-4
E 17	6.2	12.4	11600	0.0	0.0	0.0	2.6E-4	0.0	2.6E-4	2.6E-4	2.6E-4	2.6E-4
F 22	6.0	10.9	7400	0.0	3.8E-5	0.0	1.0E-4	5.4E-5	2.0E-4	1.8E-4	1.6E-4	1.6E-4
F 30	6.8	12.3	8000	0.0	0.0	0.0	5.1E-3	0.0	5.1E-3	5.1E-3	5.1E-3	5.1E-3
G 15	8.7	15.2	11900	1.3E-5	1.3E-5	1.3E-5	7.8E-5	3.0E-5	1.5E-4	1.3E-4	1.2E-4	1.2E-4
G 28	9.2	9.6	12200	0.0	1.3E-5	0.0	3.1E-5	2.6E-5	7.0E-5	6.4E-5	5.7E-5	5.7E-5
I 09	5.9	10.1	12300	1.1E-5	0.0	1.1E-5	3.2E-5	5.3E-5	1.1E-4	1.0E-4	1.0E-4	1.0E-4
I 18	7.8	4.7	12100	1.4E-5	1.4E-5	1.4E-5	7.5E-5	2.5E-5	1.4E-4	1.2E-4	1.1E-4	1.1E-4
J 15	7.9	3.0	12200	1.2E-5	1.2E-5	1.2E-5	4.2E-4	3.0E-5	4.9E-4	4.9E-4	4.6E-4	4.6E-4
J 16	8.9	8.2	12600	1.3E-5	1.3E-5	1.3E-5	2.9E-4	3.2E-5	3.6E-4	3.6E-4	3.3E-4	3.3E-4
K 18	9.8	6.0	12200	0.0	1.4E-5	0.0	8.7E-5	1.4E-5	1.1E-4	1.1E-4	1.0E-4	1.0E-4
AVERAGES												
SPREADER,NO REINJ FROM D.C.				2.1E-6	1.5E-5	3.8E-6	1.0E-3	2.1E-5	1.0E-3	1.0E-3	1.0E-3	1.0E-3
MASS FIRED OVERFEED				8.2E-6	8.8E-6	8.2E-6	3.1E-4	5.5E-5	3.9E-4	3.8E-4	3.7E-4	3.7E-4
HIGH				1.4E-5	3.8E-5	1.4E-5	5.1E-3	1.8E-4	5.1E-3	5.1E-3	5.1E-3	5.1E-3
LOW				1.1E-5	1.2E-5	1.0E-5	3.1E-5	1.4E-5	7.0E-5	6.4E-5	5.7E-5	5.7E-5
CORRELATIONS WITH -												
FLUE GAS OXYGEN, PERCENT				-0.04	-0.04	-0.01	-0.17	0.37	-0.16			
COAL FINES, PERCENT				-0.22	0.12	-0.06	0.16	-0.42	0.15			
COAL VOLATILES				0.44	-0.35	0.48	-0.58	0.10	-0.58			
GRATE HEAT RELEASE				-0.27	0.29	-0.24	0.33	-0.53	0.32			
HYDROCARBONS				-0.33	0.62	-0.38	0.19	0.03	0.19			
BOILER EFFICIENCY				-0.33	-0.02	-0.29	0.23	0.09	0.24			
CARBON MONOXIDE				-0.39	0.39	-0.46	0.53	-0.01	0.54			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

FLUORANTHENE

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	EMISSIONS NG/J: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
A 27	4.2	20.0	14500	1.1E-5	2.5E-4	6.8E-5	2.6E-5	5.3E-5	4.0E-4	3.3E-4	1.5E-4	1.5E-4
A 40	6.9	28.0	14300	0.0	5.1E-6	7.4E-6	0.0	1.4E-5	2.6E-5	2.5E-5	2.1E-5	2.1E-5
B 30	6.0	10.0	10600	1.5E-3	1.0E-5	1.0E-5	6.1E-5	2.0E-5	1.7E-3	2.4E-4	1.0E-4	9.4E-5
B 31	6.0	9.0	11200	5.9E-4	0.0	1.2E-4	4.7E-4	6.1E-5	1.3E-3	7.1E-4	6.6E-4	6.6E-4
B 33	6.1	8.0	11100	1.1E-3	1.2E-5	9.2E-5	2.0E-5	1.1E-4	1.4E-3	3.3E-4	2.3E-4	2.2E-4
C 44	8.9	16.0	15000	1.2E-5	1.2E-5	1.2E-5	2.3E-3	1.2E-5	2.4E-3	2.3E-3	2.3E-3	2.3E-3
C 45	8.3	15.0	14500	1.1E-5	1.1E-5	1.1E-5	4.0E-4	1.1E-5	4.5E-4	4.3E-4	4.3E-4	4.2E-4
C 46	9.0	16.0	11900	1.2E-5	1.2E-5	1.4E-5	3.3E-4	1.4E-5	3.8E-4	3.7E-4	3.6E-4	3.6E-4
AVERAGE				4.2E-4	3.8E-5	4.2E-5	4.5E-4	3.7E-5	1.0E-3	6.0E-4	5.4E-4	5.3E-4
HIGH				1.5E-3	2.5E-4	1.2E-4	2.3E-3	1.1E-4	2.4E-3	2.3E-3	2.3E-3	2.3E-3
LOW				1.1E-5	5.1E-6	7.4E-6	2.0E-5	1.1E-5	2.6E-5	2.5E-5	2.1E-5	2.1E-5

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	EMISSIONS NG/J: 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	13.2	4.1	12000	1.5E-5	1.5E-5	3.5E-5	2.9E-2	5.0E-5	2.9E-2	2.9E-2	2.9E-2	2.9E-2
E 16	8.3	13.5	11700	2.0E-5	2.0E-5	1.0E-5	9.3E-5	1.4E-5	1.6E-4	1.3E-4	1.2E-4	1.2E-4
E 17	6.2	12.4	11600	2.0E-5	2.0E-5	1.0E-5	1.2E-4	1.0E-5	1.8E-4	1.6E-4	1.5E-4	1.4E-4
F 22	6.0	10.9	7400	3.2E-5	3.2E-5	1.6E-5	5.1E-5	3.5E-5	1.6E-4	1.2E-4	1.0E-4	1.0E-4
F 30	6.8	12.3	8000	2.7E-5	2.7E-5	0.0	2.2E-3	1.4E-5	2.2E-3	2.2E-3	2.2E-3	2.2E-3
G 15	8.7	15.2	11900	0.0	0.0	0.0	3.5E-5	1.3E-5	4.8E-5	4.8E-5	4.8E-5	4.8E-5
G 20	3.2	9.6	12200	1.3E-5	0.0	0.0	1.6E-5	1.3E-5	4.1E-5	2.9E-5	2.9E-5	2.9E-5
H 11	9.4	6.8	13500	2.8E-5	1.4E-5	1.4E-5	0.0	3.0E-5	8.6E-5	5.3E-5	4.5E-5	4.5E-5
I 09	5.9	10.1	12300	0.0	0.0	0.0	1.3E-5	1.1E-5	2.3E-5	2.3E-5	2.3E-5	2.3E-5
I 18	7.8	4.7	12100	0.0	0.0	0.0	6.7E-5	1.4E-5	8.1E-5	8.1E-5	8.1E-5	8.1E-5
J 15	7.9	3.0	12200	0.0	1.2E-5	0.0	2.6E-4	1.2E-5	2.8E-4	2.8E-4	2.7E-4	2.7E-4
J 16	8.9	8.2	12600	0.0	0.0	0.0	2.4E-4	1.3E-5	2.5E-4	2.5E-4	2.5E-4	2.5E-4
K 18	9.8	6.0	12200	1.4E-5	1.4E-5	1.4E-5	3.6E-5	1.4E-5	9.2E-5	7.2E-5	6.4E-5	6.5E-5
AVERAGES												
SPREADER, NO REINJ FROM D.C.				1.9E-5	1.6E-5	5.9E-6	4.2E-4	1.6E-5	4.7E-4	4.5E-4	4.4E-4	4.4E-4
MASS FIRED OVERFEED				8.0E-6	7.7E-6	9.0E-6	4.3E-3	2.1E-5	4.3E-3	4.3E-3	4.3E-3	4.3E-3
HIGH				3.2E-5	3.2E-5	3.5E-5	2.9E-2	5.0E-5	2.9E-2	2.9E-2	2.9E-2	2.9E-2
LOW				1.3E-5	1.2E-5	1.0E-5	1.3E-5	1.0E-5	2.3E-5	2.3E-5	2.3E-5	2.3E-5
CORRELATIONS WITH -												
FLUE GAS OXYGEN, PERCENT				-0.13	-0.32	0.36	0.41	0.32	0.41			
COAL FINES, PERCENT				0.26	0.18	-0.28	-0.37	-0.33	-0.36			
COAL VOLATILES				-0.56	-0.72	-0.04	0.03	-0.17	0.03			
GRATE HEAT RELEASE				0.45	0.40	-0.36	-0.48	-0.27	-0.47			
HYDROCARBONS				0.46	0.15	0.20	-0.11	0.35	-0.10			
BOILER EFFICIENCY				0.18	0.55	0.29	0.26	0.11	0.26			
CARBON MONOXIDE				0.76	0.71	0.19	-0.06	0.43	-0.05			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

PYRENE

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	EMISSIONS NG/J: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
A 27	4.2	20.0	14500	3.0E-5	1.6E-4	2.0E-4	6.2E-5	4.9E-5	5.0E-4	4.3E-4	3.1E-4	3.1E-4
A 40	6.9	26.0	14300	0.0	3.9E-6	1.8E-5	0.0	1.3E-5	3.5E-5	3.4E-5	3.1E-5	3.1E-5
B 30	6.0	10.0	10600	2.0E-4	1.0E-5	1.0E-5	1.8E-5	1.0E-5	2.5E-4	6.4E-5	4.0E-5	3.9E-5
B 31	6.0	9.0	11200	1.6E-4	0.0	8.1E-5	9.5E-5	1.0E-4	4.4E-4	2.9E-4	2.8E-4	2.8E-4
B 33	6.1	8.0	11100	2.9E-4	1.0E-5	5.9E-5	1.8E-5	1.0E-5	3.9E-4	1.2E-4	8.9E-5	8.7E-5
C 44	8.9	16.0	15000	1.2E-5	1.2E-5	1.2E-5	6.2E-4	1.2E-5	6.7E-4	6.6E-4	6.5E-4	6.5E-4
C 45	8.3	15.0	14500	1.1E-5	1.1E-5	0.0	6.7E-6	1.1E-5	4.0E-5	2.7E-5	1.8E-5	1.8E-5
C 46	9.0	16.0	11900	0.0	1.2E-5	1.2E-5	3.0E-4	1.6E-5	3.4E-4	3.3E-4	3.3E-4	3.3E-4
AVERAGE				8.9E-5	2.7E-5	4.9E-5	1.4E-4	2.8E-5	3.3E-4	2.5E-4	2.2E-4	2.2E-4
HIGH				2.9E-4	1.6E-4	2.0E-4	6.2E-4	1.0E-4	6.7E-4	6.6E-4	6.5E-4	6.5E-4
LOW				1.1E-5	3.9E-6	1.0E-5	6.7E-6	1.0E-5	3.5E-5	2.7E-5	1.8E-5	1.8E-5

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	EMISSIONS NG/J: 10.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	4.1	12000	1.5E-5	1.5E-5	0.0	2.3E-4	1.0E-4	3.5E-4	3.3E-4	3.2E-4	3.2E-4
E 16	8.3	13.5	11700	2.8E-5	2.0E-5	1.0E-5	8.7E-5	2.2E-5	1.7E-4	1.3E-4	1.2E-4	1.2E-4
E 17	6.2	12.4	11600	2.0E-5	2.0E-5	1.0E-5	9.1E-5	1.0E-5	1.5E-4	1.2E-4	1.1E-4	1.1E-4
F 22	6.0	10.9	7400	3.2E-5	3.2E-5	0.0	7.3E-5	8.2E-5	2.2E-4	1.7E-4	1.6E-4	1.6E-4
F 30	6.8	12.3	8000	2.7E-5	2.7E-5	1.4E-5	1.0E-4	1.4E-5	1.8E-4	1.4E-4	1.3E-4	1.3E-4
G 15	8.7	15.2	11900	0.0	0.0	0.0	2.5E-5	1.3E-5	3.8E-5	3.8E-5	3.8E-5	3.8E-5
G 20	9.2	9.6	12200	0.0	0.0	0.0	1.6E-5	1.3E-5	2.8E-5	2.8E-5	2.8E-5	2.8E-5
H 11	9.4	6.8	13500	2.8E-5	1.4E-5	1.4E-5	0.0	3.0E-5	8.6E-5	5.3E-5	4.5E-5	4.5E-5
I 09	5.9	10.1	12300	0.0	0.0	0.0	2.8E-5	3.2E-5	5.9E-5	5.9E-5	5.9E-5	5.9E-5
I 18	7.8	4.7	12100	0.0	0.0	0.0	6.1E-5	1.4E-5	7.5E-5	7.5E-5	7.5E-5	7.5E-5
J 15	7.9	3.0	12200	0.0	0.0	0.0	2.6E-4	2.1E-5	2.8E-4	2.8E-4	2.8E-4	2.8E-4
J 16	8.9	8.2	12600	0.0	0.0	0.0	1.7E-4	1.6E-5	1.9E-4	1.9E-4	1.9E-4	1.9E-4
K 18	9.8	6.0	12200	1.4E-5	1.4E-5	1.4E-5	8.4E-5	1.4E-5	1.4E-4	1.2E-4	1.1E-4	1.1E-4
AVERAGES												
SPREADER, NO REINJ FROM D.C.				1.8E-5	1.6E-5	5.6E-6	6.5E-5	2.6E-5	1.3E-4	1.1E-4	1.0E-4	1.0E-4
MASS FIRED OVERFEED				8.0E-6	6.1E-6	4.0E-6	1.2E-4	3.2E-5	1.7E-4	1.6E-4	1.5E-4	1.5E-4
HIGH				3.2E-5	3.2E-5	1.4E-5	2.6E-4	1.0E-4	3.5E-4	3.3E-4	3.2E-4	3.2E-4
LOW				1.4E-5	1.4E-5	1.0E-5	1.6E-5	1.0E-5	2.8E-5	2.8E-5	2.8E-5	2.8E-5
CORRELATIONS WITH -												
FLUE GAS OXYGEN, PERCENT				-0.18	-0.30	0.07	0.17	0.05	0.10			
COAL FINES, PERCENT				0.28	0.31	0.18	-0.52	-0.25	-0.42			
COAL VOLATILES				-0.54	-0.72	-0.06	-0.02	-0.32	-0.27			
GRATE HEAT RELEASE				0.37	0.44	0.15	-0.45	-0.21	-0.32			
HYDROCARBONS				0.43	0.18	0.42	-0.37	0.09	-0.17			
BOILER EFFICIENCY				0.27	0.39	0.11	0.83	0.20	0.84			
CARBON MONOXIDE				0.71	0.73	0.26	-0.17	0.41	0.18			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

METHYLPYRENE/FLUORANTHENE

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	*- - - EMISSIONS - - - - NG/J - - - - -* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	10.0	10600	1.6E-4	0.0	0.0	6.9E-5	0.0	2.3E-4	8.4E-5	7.0E-5	7.0E-5
B 31	6.0	9.0	11200	0.0	0.0	0.0	1.2E-5	0.0	1.2E-5	1.2E-5	1.2E-5	1.2E-5
C 44	8.9	16.0	15000	1.2E-5	1.2E-5	0.0	4.0E-5	1.2E-5	7.5E-5	6.1E-5	5.1E-5	5.1E-5
C 45	8.3	15.0	14500	1.1E-5	0.0	1.1E-5	0.0	1.1E-5	3.4E-5	2.3E-5	2.2E-5	2.2E-5
C 46	9.0	16.0	11900	1.2E-5	1.2E-5	1.2E-5	1.2E-5	1.2E-5	5.9E-5	4.5E-5	3.5E-5	3.5E-5
AVERAGE				4.0E-5	4.7E-6	4.6E-6	2.7E-5	6.9E-6	8.2E-5	4.5E-5	3.8E-5	3.8E-5
HIGH				1.6E-4	1.2E-5	1.2E-5	6.9E-5	1.2E-5	2.3E-4	8.4E-5	7.0E-5	7.0E-5
LOW				1.1E-5	1.2E-5	1.1E-5	1.2E-5	1.1E-5	1.2E-5	1.2E-5	1.2E-5	1.2E-5

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	*- - - EMISSIONS - - - - NG/J - - - - -* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	4.1	12000	0.0	0.0	0.0	5.9E-5	1.8E-5	7.6E-5	7.6E-5	7.6E-5	7.6E-5
E 16	6.3	13.5	11700	0.0	2.0E-5	0.0	2.4E-5	1.0E-5	5.3E-5	4.5E-5	3.4E-5	3.4E-5
E 17	6.2	12.4	11600	0.0	2.0E-5	0.0	4.0E-5	0.0	6.0E-5	5.1E-5	4.0E-5	4.0E-5
F 22	6.0	10.9	7400	0.0	3.2E-5	0.0	2.5E-5	0.0	5.7E-5	4.3E-5	2.6E-5	2.5E-5
F 30	6.6	12.3	8000	0.0	0.0	0.0	3.4E-4	1.4E-5	3.5E-4	3.5E-4	3.5E-4	3.5E-4
G 15	8.7	15.2	11900	0.0	0.0	0.0	1.3E-5	1.3E-5	2.5E-5	2.5E-5	2.5E-5	2.5E-5
G 20	9.2	9.6	12200	0.0	0.0	0.0	1.3E-5	1.3E-5	2.6E-5	2.6E-5	2.6E-5	2.6E-5
H 11	9.4	6.8	13500	0.0	2.8E-5	0.0	0.0	0.0	2.8E-5	1.5E-5	1.9E-7	4.2E-7
I 09	5.9	10.1	12300	0.0	0.0	0.0	1.1E-5	1.1E-5	2.1E-5	2.1E-5	2.1E-5	2.1E-5
I 18	7.8	4.7	12100	0.0	0.0	0.0	1.4E-5	1.4E-5	2.8E-5	2.8E-5	2.8E-5	2.8E-5
J 15	7.9	3.0	12200	0.0	0.0	0.0	7.7E-5	1.2E-5	8.9E-5	8.9E-5	8.9E-5	8.9E-5
J 16	8.9	8.2	12600	0.0	0.0	0.0	1.0E-4	1.3E-5	1.2E-4	1.2E-4	1.2E-4	1.2E-4
K 18	9.8	6.0	12200	0.0	0.0	0.0	1.4E-5	0.0	1.4E-5	1.4E-5	1.4E-5	1.4E-5
AVERAGES												
SPREADER,NO REINJ FROM D.C.				0.0	1.2E-5	0.0	7.5E-5	8.2E-6	1.0E-4	9.0E-5	8.4E-5	8.4E-5
MASS FIRED OVERFEED				0.0	4.0E-6	0.0	4.0E-5	1.0E-5	5.3E-5	5.1E-5	4.9E-5	4.9E-5
HIGH					3.2E-5		3.4E-4	1.8E-5	3.5E-4	3.5E-4	3.5E-4	3.5E-4
LOW					2.0E-5		1.1E-5	1.0E-5	1.4E-5	1.4E-5	1.9E-7	4.2E-7

CORRELATIONS WITH -						
FLUE GAS OXYGEN, PERCENT	0.00	-0.29	0.00	-0.22	0.22	-0.24
COAL FINES, PERCENT	0.00	0.28	0.00	0.14	-0.13	0.17
COAL VOLATILES	0.00	-0.27	0.00	-0.55	0.11	-0.59
GRATE HEAT RELEASE	0.00	0.38	0.00	0.31	-0.23	0.34
HYDROCARBONS	0.00	0.57	0.00	-0.14	-0.47	-0.12
BOILER EFFICIENCY	0.00	0.07	0.00	0.39	-0.05	0.40
CARBON MONOXIDE	0.00	0.57	0.00	0.41	-0.36	0.46

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

BENZO(C)PHENANTHRENE

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	EMISSIONS NG/J: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	10.0	10600	1.0E-5	0.0	0.0	1.0E-5	0.0	2.0E-5	1.1E-5	1.0E-5	1.0E-5
B 31	6.0	9.0	11200	0.0	0.0	0.0	1.0E-5	0.0	1.0E-5	1.0E-5	1.0E-5	1.0E-5
B 33	6.1	8.0	11100	0.0	0.0	0.0	1.0E-5	1.0E-5	2.0E-5	2.0E-5	2.0E-5	2.0E-5
C 44	8.9	16.0	15000	1.2E-5	1.2E-5	1.2E-5	1.2E-5	1.2E-5	5.8E-5	4.5E-5	3.5E-5	3.5E-5
C 45	8.3	15.0	14500	1.1E-5	0.0	1.1E-5	0.0	0.0	2.2E-5	1.2E-5	1.1E-5	1.1E-5
C 46	9.0	16.0	11900	1.2E-5	0.0	1.2E-5	1.2E-5	1.2E-5	4.7E-5	3.6E-5	3.5E-5	3.5E-5
AVERAGE				7.5E-6	1.9E-6	5.8E-6	8.9E-6	5.5E-6	3.0E-5	2.2E-5	2.0E-5	2.0E-5
HIGH				1.2E-5	1.2E-5	1.2E-5	1.2E-5	1.2E-5	5.8E-5	4.5E-5	3.5E-5	3.5E-5
LOW				1.0E-5	1.2E-5	1.1E-5	1.0E-5	1.0E-5	1.0E-5	1.0E-5	1.0E-5	1.0E-5

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	EMISSIONS NG/J: 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	4.1	12000	1.5E-5	1.5E-5	0.0	1.5E-5	1.5E-5	5.9E-5	3.8E-5	2.9E-5	3.0E-5
E 16	8.3	13.5	11700	0.0	2.0E-5	0.0	1.0E-5	1.0E-5	4.0E-5	3.1E-5	2.0E-5	2.0E-5
E 17	6.2	12.4	11600	0.0	2.0E-5	0.0	1.0E-5	0.0	3.0E-5	2.1E-5	1.0E-5	1.0E-5
F 22	6.0	10.9	7400	0.0	0.0	0.0	1.6E-5	1.6E-5	3.2E-5	3.2E-5	3.2E-5	3.2E-5
F 30	6.8	12.3	8000	0.0	0.0	1.4E-5	0.0	0.0	1.4E-5	1.4E-5	1.4E-5	1.4E-5
H 11	9.4	6.8	13500	0.0	0.0	0.0	1.9E-5	1.4E-5	3.3E-5	3.3E-5	3.3E-5	3.3E-5
AVERAGES												
SPREADER, NO REINJ FROM D.C.				0.0	1.0E-5	3.4E-6	8.9E-6	6.4E-6	2.9E-5	2.4E-5	1.9E-5	1.9E-5
MASS FIRED OVERFEED				7.3E-6	7.3E-6	0.0	1.7E-5	1.4E-5	4.6E-5	3.6E-5	3.1E-5	3.1E-5
HIGH				1.5E-5	2.0E-5	1.4E-5	1.9E-5	1.6E-5	5.9E-5	3.8E-5	3.3E-5	3.3E-5
LOW				1.5E-5	1.5E-5	1.4E-5	1.0E-5	1.0E-5	1.4E-5	1.4E-5	1.0E-5	1.0E-5
CORRELATIONS WITH -												
FLUE GAS OXYGEN, PERCENT				0.67	0.14	-0.28	0.43	0.51	0.71			
COAL FINES, PERCENT				-0.78	0.16	0.30	-0.60	-0.60	-0.67			
COAL VOLATILES				0.26	0.46	-0.54	0.48	0.17	0.53			
GRATE HEAT RELEASE				-0.82	-0.34	0.46	-0.51	-0.51	-0.88			
HYDROCARBONS				-0.24	-0.54	-0.19	0.59	0.37	-0.08			
BOILER EFFICIENCY				0.28	0.59	0.10	-0.50	-0.44	0.11			
CARBON MONOXIDE				-0.36	-0.94	0.41	0.00	0.20	-0.54			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

BENZ(A)ANTHRACENE

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	EMISSIONS NG/J: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	10.0	10600	1.0E-5	0.0	0.0	1.0E-5	0.0	2.0E-5	1.1E-5	1.0E-5	1.0E-5
B 31	6.0	9.0	11200	1.6E-5	0.0	1.0E-5	1.0E-5	1.0E-5	4.5E-5	3.1E-5	3.0E-5	3.0E-5
B 33	6.1	8.0	11100	0.0	1.0E-5	1.0E-5	0.0	1.2E-5	3.1E-5	2.9E-5	2.2E-5	2.2E-5
C 44	8.9	16.0	15000	1.2E-5	1.2E-5	1.2E-5	0.0	1.2E-5	4.7E-5	3.3E-5	2.3E-5	2.3E-5
C 45	8.3	15.0	14500	1.1E-5	1.1E-5	1.1E-5	1.1E-5	0.0	4.5E-5	3.2E-5	2.3E-5	2.2E-5
C 46	9.0	16.0	11900	1.2E-5	1.2E-5	1.2E-5	0.0	1.2E-5	4.7E-5	3.3E-5	2.4E-5	2.3E-5
AVERAGE				1.0E-5	7.4E-6	9.0E-6	5.2E-6	7.5E-6	3.9E-5	2.8E-5	2.2E-5	2.2E-5
HIGH				1.6E-5	1.2E-5	1.2E-5	1.1E-5	1.2E-5	4.7E-5	3.3E-5	3.0E-5	3.0E-5
LOW				1.0E-5	1.0E-5	1.0E-5	1.0E-5	1.0E-5	2.0E-5	1.1E-5	1.0E-5	1.0E-5

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	EMISSIONS NG/J: 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	4.1	12000	1.5E-5	1.5E-5	0.0	3.5E-5	1.5E-5	7.9E-5	5.8E-5	5.0E-5	5.0E-5
E 16	8.3	13.5	11700	0.0	0.0	0.0	0.0	1.0E-5	1.0E-5	1.0E-5	1.0E-5	1.0E-5
E 17	6.2	12.4	11600	0.0	2.0E-5	0.0	1.0E-5	0.0	3.0E-5	2.1E-5	1.0E-5	1.0E-5
F 22	6.0	10.9	7400	0.0	0.0	0.0	1.6E-5	0.0	1.6E-5	1.6E-5	1.6E-5	1.6E-5
G 20	9.2	9.6	12200	0.0	0.0	0.0	1.3E-5	0.0	1.3E-5	1.3E-5	1.3E-5	1.3E-5
H 11	9.4	6.8	13500	0.0	0.0	0.0	0.0	1.4E-5	1.4E-5	1.4E-5	1.4E-5	1.4E-5
K 18	9.8	6.0	12200	0.0	0.0	0.0	1.4E-5	0.0	1.4E-5	1.4E-5	1.4E-5	1.4E-5
AVERAGES												
SPREADER,NO REINJ FROM D.C.				0.0	5.0E-6	0.0	1.0E-5	2.5E-6	1.7E-5	1.5E-5	1.2E-5	1.2E-5
MASS FIRED OVERFEED				4.9E-6	4.9E-6	0.0	1.6E-5	9.5E-6	3.6E-5	2.9E-5	2.6E-5	2.6E-5
HIGH				1.5E-5	2.0E-5		3.5E-5	1.5E-5	7.9E-5	5.8E-5	5.0E-5	5.0E-5
LOW				1.5E-5	1.5E-5		1.0E-5	1.0E-5	1.0E-5	1.0E-5	1.0E-5	1.0E-5

CORRELATIONS WITH -						
FLUE GAS OXYGEN, PERCENT	0.45	-0.21	0.00	0.24	0.53	0.29
COAL FINES, PERCENT	-0.62	-0.03	0.00	-0.59	-0.40	-0.55
COAL VOLATILES	0.10	0.08	0.00	-0.22	0.45	0.07
GRATE HEAT RELEASE	-0.69	-0.16	0.00	-0.47	-0.60	-0.60
HYDROCARBONS	-0.19	-0.29	0.00	-0.45	0.48	-0.23
BOILER EFFICIENCY	0.35	0.69	0.00	0.42	-0.13	0.48
CARBON MONOXIDE	-0.17	-0.34	0.00	-0.07	0.00	-0.19

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

CHRYSENE

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	EMISSIONS NG/J: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	10.0	10600	1.0E-5	0.0	0.0	2.0E-5	0.0	3.1E-5	2.1E-5	2.0E-5	2.0E-5
B 31	6.0	9.0	11200	1.0E-5	0.0	2.2E-5	5.9E-6	1.0E-5	4.7E-5	3.8E-5	3.8E-5	3.8E-5
B 33	6.1	8.0	11100	0.0	0.0	1.4E-5	2.9E-5	2.4E-5	6.7E-5	6.7E-5	6.7E-5	6.7E-5
C 44	8.9	16.0	15000	1.2E-5	1.2E-5	1.2E-5	2.3E-5	1.2E-5	7.0E-5	5.6E-5	4.7E-5	4.7E-5
C 45	8.3	15.0	14500	1.1E-5	1.1E-5	1.1E-5	0.0	0.0	3.4E-5	2.1E-5	1.1E-5	1.1E-5
C 46	9.0	16.0	11900	1.2E-5	1.2E-5	1.9E-5	5.9E-5	2.3E-5	1.2E-4	1.1E-4	1.0E-4	1.0E-4
AVERAGE				9.1E-6	5.8E-6	1.3E-5	2.3E-5	1.1E-5	6.2E-5	5.2E-5	4.7E-5	4.7E-5
HIGH				1.2E-5	1.2E-5	2.2E-5	5.9E-5	2.4E-5	1.2E-4	1.1E-4	1.0E-4	1.0E-4
LOW				1.0E-5	1.1E-5	1.1E-5	5.9E-6	1.0E-5	3.1E-5	2.1E-5	1.1E-5	1.1E-5

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	EMISSIONS NG/J: 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	13.2	4.1	12000	1.5E-5	1.5E-5	0.0	7.3E-5	3.5E-5	1.4E-4	1.2E-4	1.1E-4	1.1E-4
E 16	8.3	13.5	11700	2.0E-5	0.0	1.0E-5	1.4E-5	1.0E-5	5.3E-5	3.4E-5	3.4E-5	3.4E-5
E 17	6.2	12.4	11600	2.0E-5	2.0E-5	1.0E-5	1.0E-5	1.0E-5	6.9E-5	4.1E-5	3.0E-5	3.0E-5
F 22	6.0	10.9	7400	0.0	3.2E-5	1.6E-5	1.9E-5	1.6E-5	8.2E-5	6.8E-5	5.1E-5	5.1E-5
F 30	6.8	12.3	8000	2.7E-5	2.7E-5	1.4E-5	2.7E-5	1.4E-5	1.1E-4	7.0E-5	5.5E-5	5.4E-5
G 15	8.7	15.2	11900	0.0	0.0	0.0	1.3E-5	0.0	1.3E-5	1.3E-5	1.3E-5	1.3E-5
G 20	9.2	9.6	12200	0.0	0.0	0.0	1.3E-5	0.0	1.3E-5	1.3E-5	1.3E-5	1.3E-5
H 11	9.4	6.8	13500	2.8E-5	1.4E-5	1.4E-5	5.5E-5	2.2E-5	1.3E-4	1.0E-4	9.2E-5	9.2E-5
I 18	7.8	4.7	12100	0.0	0.0	0.0	1.4E-5	0.0	1.4E-5	1.4E-5	1.4E-5	1.4E-5
J 15	7.9	3.0	12200	0.0	0.0	0.0	1.2E-5	1.2E-5	2.3E-5	2.3E-5	2.3E-5	2.3E-5
J 16	8.9	6.2	12600	0.0	0.0	0.0	1.3E-5	1.3E-5	2.6E-5	2.6E-5	2.6E-5	2.6E-5
K 18	9.8	6.0	12200	0.0	0.0	0.0	1.4E-5	0.0	1.4E-5	1.4E-5	1.4E-5	1.4E-5
AVERAGES												
SPREADER, NO REINJ FROM D.C.				1.1E-5	1.3E-5	8.2E-6	1.6E-5	8.2E-6	5.7E-5	4.0E-5	3.2E-5	3.2E-5
MASS FIRED OVERFEED				7.1E-6	4.7E-6	2.3E-6	3.0E-5	1.4E-5	5.8E-5	4.9E-5	4.6E-5	4.6E-5
HIGH				2.8E-5	3.2E-5	1.6E-5	7.3E-5	3.5E-5	1.4E-4	1.2E-4	1.1E-4	1.1E-4
LOW				1.5E-5	1.4E-5	1.0E-5	1.0E-5	1.0E-5	1.3E-5	1.3E-5	1.3E-5	1.3E-5

CORRELATIONS WITH -						
FLUE GAS OXYGEN, PERCENT	-0.12	-0.60	-0.60	0.45	0.13	-0.04
COAL FINES, PERCENT	0.24	0.24	0.44	-0.37	-0.29	-0.04
COAL VOLATILES	-0.09	-0.76	-0.59	0.11	-0.09	-0.27
GRATE HEAT RELEASE	0.16	0.48	0.59	-0.42	-0.32	-0.01
HYDROCARBONS	0.49	0.24	0.50	0.50	0.36	0.54
BOILER EFFICIENCY	0.10	0.26	0.08	-0.04	0.40	0.17
CARBON MONOXIDE	0.33	0.84	0.81	0.27	0.36	0.60

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

METHYLCHRYSENES

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	EMISSIONS NG/J: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	10.0	10600	0.0	0.0	0.0	2.0E-5	0.0	2.0E-5	2.0E-5	2.0E-5	2.0E-5
B 31	6.0	9.0	11200	0.0	0.0	1.2E-5	1.4E-5	0.0	2.6E-5	2.6E-5	2.6E-5	2.6E-5
B 33	6.1	8.0	11100	0.0	0.0	1.0E-5	0.0	0.0	1.0E-5	1.0E-5	1.0E-5	1.0E-5
AVERAGE				0.0	0.0	7.2E-6	1.1E-5	0.0	1.9E-5	1.9E-5	1.9E-5	1.9E-5
HIGH						1.2E-5	2.0E-5		2.6E-5	2.6E-5	2.6E-5	2.6E-5
LOW						1.0E-5	1.4E-5		1.0E-5	1.0E-5	1.0E-5	1.0E-5

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	EMISSIONS NG/J: 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	4.1	12000	0.0	0.0	0.0	4.7E-5	1.5E-5	6.1E-5	6.1E-5	6.1E-5	6.1E-5
E 16	8.3	13.5	11700	0.0	0.0	0.0	1.0E-5	0.0	1.0E-5	1.0E-5	1.0E-5	1.0E-5
E 17	6.2	12.4	11600	0.0	0.0	0.0	1.0E-5	0.0	1.0E-5	1.0E-5	1.0E-5	1.0E-5
F 22	6.0	10.9	7400	0.0	3.2E-5	0.0	1.9E-5	0.0	5.1E-5	3.6E-5	1.9E-5	1.9E-5
F 30	6.6	12.3	8000	0.0	0.0	1.4E-5	2.4E-5	0.0	3.8E-5	3.8E-5	3.8E-5	3.8E-5
G 15	8.7	15.2	11900	0.0	0.0	0.0	1.3E-5	0.0	1.3E-5	1.3E-5	1.3E-5	1.3E-5
G 20	9.2	9.6	12200	0.0	0.0	0.0	1.3E-5	0.0	1.3E-5	1.3E-5	1.3E-5	1.3E-5
H 11	9.4	6.8	13500	0.0	2.8E-5	0.0	0.0	1.4E-5	4.2E-5	2.9E-5	1.4E-5	1.4E-5
J 15	7.9	3.0	12200	0.0	0.0	0.0	1.2E-5	0.0	1.2E-5	1.2E-5	1.2E-5	1.2E-5
J 16	8.9	8.2	12600	0.0	0.0	0.0	1.3E-5	0.0	1.3E-5	1.3E-5	1.3E-5	1.3E-5
K 18	9.8	6.8	12200	0.0	0.0	0.0	1.4E-5	0.0	1.4E-5	1.4E-5	1.4E-5	1.4E-5
AVERAGES												
SPREADER,NO REINJ FROM D.C.				0.0	5.3E-6	2.3E-6	1.5E-5	0.0	2.2E-5	2.0E-5	1.7E-5	1.7E-5
MASS FIRED OVERFEED				0.0	5.5E-6	0.0	1.7E-5	5.7E-6	2.8E-5	2.6E-5	2.3E-5	2.3E-5
HIGH					3.2E-5	1.4E-5	4.7E-5	1.5E-5	6.1E-5	6.1E-5	6.1E-5	6.1E-5
LOW					2.8E-5	1.4E-5	1.0E-5	1.4E-5	1.0E-5	1.0E-5	1.0E-5	1.0E-5

CORRELATIONS WITH -						
FLUE GAS OXYGEN, PERCENT	0.00	-0.25	-0.35	0.16	0.52	0.02
COAL FINES, PERCENT	0.00	-0.04	0.25	-0.25	-0.48	-0.27
COAL VOLATILES	0.00	-0.30	-0.59	-0.32	0.34	-0.41
GRATE HEAT RELEASE	0.00	0.22	0.42	-0.28	-0.53	-0.11
HYDROCARBONS	0.00	0.72	-0.07	-0.42	0.62	0.36
BOILER EFFICIENCY	0.00	-0.28	0.10	0.34	-0.19	0.00
CARBON MONOXIDE	0.00	0.77	0.48	0.08	0.13	0.67

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

DIMETHYLBENZANTHRACENES

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	EMISSIONS - NG/J: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
B 38	6.0	10.0	10600	0.0	0.0	0.0	1.0E-5	0.0	1.0E-5	1.0E-5	1.0E-5	1.0E-5

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

BENZOFLUORANTHENES

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	EMISSIONS NG/J 10 µM + 3 UM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	STACK GAS CLEAN-UP MULTI-CLONE	E.S.P.	BAGHOUSE
B 33	6.0	10.0	10600	0.0	0.0	0.0	1.8E-5	0.0	1.8E-5	1.8E-5	1.3E-5	1.8E-5
B 33	6.1	8.0	11100	0.0	0.0	1.8E-5	1.0E-5	0.0	2.8E-5	2.8E-5	2.8E-5	2.8E-5
C 44	8.9	16.0	15000	0.0	0.0	0.0	1.2E-5	7.0E-5	8.2E-5	8.2E-5	8.2E-5	8.2E-5
C 45	6.3	15.0	14500	3.0	0.0	0.0	1.1E-5	1.8E-5	2.9E-5	2.9E-5	2.9E-5	2.9E-5
C 46	9.0	16.0	11900	0.0	0.0	0.0	0.0	1.5E-4	1.5E-4	1.5E-4	1.5E-4	1.5E-4
AVERAGE				0.0	0.0	2.0E-6	8.6E-6	4.8E-5	5.8E-5	5.8E-5	5.8E-5	5.8E-5
HIGH						1.0E-5	1.2E-5	1.5E-4	1.5E-4	1.5E-4	1.5E-4	1.5E-4
LOW						1.0E-5	1.0E-5	1.8E-5	1.8E-5	1.8E-5	1.8E-5	1.8E-5

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	EMISSIONS NG/J 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	STACK GAS CLEAN-UP MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	13.2	4.1	12000	0.0	1.5E-5	0.0	5.6E-5	5.9E-5	1.3E-4	1.2E-4	1.1E-4	1.1E-4
E 17	6.2	12.4	11600	0.0	2.4E-5	0.0	0.0	0.0	2.4E-5	1.3E-5	1.7E-7	1.0E-7
F 22	6.0	10.9	7400	0.0	3.2E-5	0.0	1.9E-5	1.6E-5	6.7E-5	5.2E-5	3.5E-5	3.5E-5
G 15	8.7	15.2	11900	0.0	0.0	0.0	1.3E-5	0.0	1.3E-5	1.3E-5	1.3E-5	1.3E-5
G 20	9.2	9.6	12200	0.0	0.0	0.0	1.3E-5	0.0	1.3E-5	1.3E-5	1.3E-5	1.3E-5
H 11	9.4	6.8	13500	0.0	0.0	0.0	1.4E-5	3.6E-5	5.0E-5	5.0E-5	5.0E-5	5.0E-5
I 18	7.8	4.7	12100	0.0	0.0	0.0	1.4E-5	0.0	1.4E-5	1.4E-5	1.4E-5	1.4E-5
J 16	6.9	6.2	12600	0.0	0.0	0.0	1.3E-5	0.0	1.3E-5	1.3E-5	1.3E-5	1.3E-5
K 18	9.8	6.0	12200	0.0	0.0	0.0	1.4E-5	0.0	1.4E-5	1.4E-5	1.4E-5	1.4E-5
AVERAGES												
SPREADER,NO REINJ FROM D.C.				0.0	1.4E-5	0.0	1.1E-5	4.0E-6	2.9E-5	2.3E-5	1.5E-5	1.5E-5
MASS FIRED OVERFEED				0.0	2.9E-6	0.0	2.2E-5	1.9E-5	4.4E-5	4.3E-5	4.1E-5	4.1E-5
HIGH					3.2E-5		5.6E-5	5.9E-5	1.3E-4	1.2E-4	1.1E-4	1.1E-4
LOW					1.5E-5		1.3E-5	1.6E-5	1.3E-5	1.3E-5	1.7E-7	1.0E-7

CORRELATIONS WITH -						
FLUE GAS OXYGEN, PERCENT	0.00	-0.71	0.00	0.49	0.38	0.17
COAL FINES, PERCENT	0.00	0.25	0.00	-0.53	-0.47	-0.38
COAL VOLATILES	0.00	-0.80	0.00	-0.06	0.03	-0.26
GRATE HEAT RELEASE	0.00	0.40	0.00	-0.58	-0.46	-0.35
HYDROCARBONS	0.00	-0.13	0.00	-0.08	0.43	0.16
BOILER EFFICIENCY	0.00	0.63	0.00	0.22	0.17	0.37
CARBON MONOXIDE	0.00	0.57	0.00	0.07	0.34	0.39

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

BENZO(E)PYRENE

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	EMISSIONS NG/J: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	10.0	10600	0.0	0.0	0.0	1.0E-5	0.0	1.0E-5	1.0E-5	1.0E-5	1.0E-5
B 33	6.1	8.0	11100	0.0	0.0	1.0E-5	1.0E-5	0.0	2.0E-5	2.0E-5	2.0E-5	2.0E-5
C 45	8.3	15.0	14500	0.0	0.0	0.0	1.1E-5	1.1E-5	2.2E-5	2.2E-5	2.2E-5	2.2E-5
AVERAGE				0.0	0.0	3.3E-6	1.0E-5	3.7E-6	1.7E-5	1.7E-5	1.7E-5	1.7E-5
HIGH						1.0E-5	1.1E-5	1.1E-5	2.2E-5	2.2E-5	2.2E-5	2.2E-5
LOW						1.0E-5	1.0E-5	1.1E-5	1.0E-5	1.0E-5	1.0E-5	1.0E-5

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	EMISSIONS NG/J: 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
E 16	8.3	13.5	11700	0.0	0.0	0.0	1.0E-5	0.0	1.0E-5	1.0E-5	1.0E-5	1.0E-5
E 17	6.2	12.4	11600	0.0	0.0	0.0	1.0E-5	0.0	1.0E-5	1.0E-5	1.0E-5	1.0E-5
F 22	6.0	10.9	7400	0.0	3.2E-5	0.0	1.9E-5	0.0	5.1E-5	3.6E-5	1.9E-5	1.9E-5
H 11	9.4	6.8	13500	0.0	0.0	0.0	1.4E-5	3.6E-5	5.0E-5	5.0E-5	5.0E-5	5.0E-5
J 15	7.9	3.0	12200	0.0	0.0	0.0	1.2E-5	0.0	1.2E-5	1.2E-5	1.2E-5	1.2E-5
J 16	8.9	8.2	12600	0.0	0.0	0.0	1.3E-5	0.0	1.3E-5	1.3E-5	1.3E-5	1.3E-5
K 18	9.8	6.0	12200	0.0	0.0	0.0	1.4E-5	0.0	1.4E-5	1.4E-5	1.4E-5	1.4E-5
AVERAGES												
SPREADER, NO REINJ FROM D.C.				0.0	1.1E-5	0.0	1.3E-5	0.0	2.4E-5	1.9E-5	1.3E-5	1.3E-5
MASS FIRED OVERFEED				0.0	0.0	0.0	1.3E-5	9.0E-6	2.2E-5	2.2E-5	2.2E-5	2.2E-5
HIGH					3.2E-5		1.9E-5	3.6E-5	5.1E-5	5.0E-5	5.0E-5	5.0E-5
LOW					3.2E-5		1.0E-5	3.6E-5	1.0E-5	1.0E-5	1.0E-5	1.0E-5

CORRELATIONS WITH -						
FLUE GAS OXYGEN, PERCENT	0.00	-0.61	0.00	-0.15	0.39	-0.13
COAL FINES, PERCENT	0.00	0.26	0.00	-0.14	-0.22	-0.02
COAL VOLATILES	0.00	-0.95	0.00	-0.65	0.43	-0.40
GRATE HEAT RELEASE	0.00	0.70	0.00	0.27	-0.14	0.39
HYDROCARBONS	0.00	-0.02	0.00	0.23	0.99	0.74
BOILER EFFICIENCY	0.00	-0.03	0.00	-0.33	-0.83	-0.68
CARBON MONOXIDE	0.00	0.85	0.00	0.85	0.37	0.95

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15918-564

BENZO(A)PYRENE

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	*- - - EMISSIONS - - - - NG/J - - - - -* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	10.0	10600	0.0	0.0	0.0	1.0E-5	0.0	1.0E-5	1.0E-5	1.0E-5	1.0E-5
B 33	6.1	8.0	11100	0.0	0.0	1.0E-5	1.0E-5	0.0	2.0E-5	2.0E-5	2.0E-5	2.0E-5
C 44	8.9	16.0	15000	0.0	1.2E-5	0.0	0.0	0.0	1.2E-5	6.8E-6	6.2E-8	1.8E-8
C 46	9.0	16.0	11900	0.0	0.0	1.2E-5	0.0	1.2E-5	2.3E-5	2.3E-5	2.3E-5	2.3E-5
AVERAGE				0.0	2.9E-6	5.4E-6	5.0E-6	2.9E-6	1.6E-5	1.5E-5	1.3E-5	1.3E-5
HIGH					1.2E-5	1.2E-5	1.0E-5	1.2E-5	2.3E-5	2.3E-5	2.3E-5	2.3E-5
LOW					1.2E-5	1.0E-5	1.0E-5	1.2E-5	1.0E-5	6.8E-6	6.2E-8	1.8E-8

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	*- - - EMISSIONS - - - - NG/J - - - - -* 10.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
E 16	8.3	13.5	11700	0.0	0.0	0.0	1.0E-5	0.0	1.0E-5	1.0E-5	1.0E-5	1.0E-5
H 11	9.4	6.8	13500	0.0	0.0	0.0	1.4E-5	1.4E-5	2.8E-5	2.8E-5	2.8E-5	2.8E-5
K 18	9.8	6.0	12200	0.0	0.0	0.0	1.4E-5	0.0	1.4E-5	1.4E-5	1.4E-5	1.4E-5
AVERAGES												
SPREADER,NO REINJ FROM D.C.				0.0	0.0	0.0	1.0E-5	0.0	1.0E-5	1.0E-5	1.0E-5	1.0E-5
MASS FIRED OVERFEED				0.0	0.0	0.0	1.4E-5	6.9E-6	2.1E-5	2.1E-5	2.1E-5	2.1E-5
HIGH							1.4E-5	1.4E-5	2.8E-5	2.8E-5	2.8E-5	2.8E-5
LOW							1.0E-5	1.4E-5	1.0E-5	1.0E-5	1.0E-5	1.0E-5

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

PERYLENE

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	EMISSIONS NG/J: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	10.8	10600	0.0	0.0	0.0	1.0E-5	0.0	1.0E-5	1.0E-5	1.0E-5	1.0E-5
B 33	6.1	8.0	11100	0.0	0.0	1.0E-5	1.0E-5	0.0	2.0E-5	2.0E-5	2.0E-5	2.0E-5
C 44	8.9	16.0	15000	0.0	0.0	0.0	0.0	1.2E-5	1.2E-5	1.2E-5	1.2E-5	1.2E-5
AVERAGE				0.0	0.0	3.3E-6	6.7E-6	3.9E-6	1.4E-5	1.4E-5	1.4E-5	1.4E-5
HIGH						1.0E-5	1.0E-5	1.2E-5	2.0E-5	2.0E-5	2.0E-5	2.0E-5
LOW						1.0E-5	1.0E-5	1.2E-5	1.0E-5	1.0E-5	1.0E-5	1.0E-5

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	EMISSIONS NG/J: 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
E 16	8.3	13.5	11700	0.0	0.0	0.0	1.0E-5	0.0	1.0E-5	1.0E-5	1.0E-5	1.0E-5
E 17	6.2	12.4	11600	0.0	0.0	0.0	1.0E-5	0.0	1.0E-5	1.0E-5	1.0E-5	1.0E-5
F 22	6.0	10.9	7400	0.0	0.0	0.0	1.6E-5	0.0	1.6E-5	1.6E-5	1.6E-5	1.6E-5
H 11	9.4	6.8	13500	0.0	0.0	0.0	1.4E-5	1.4E-5	2.8E-5	2.8E-5	2.8E-5	2.8E-5
K 18	9.8	6.0	12200	0.0	0.0	0.0	1.4E-5	0.0	1.4E-5	1.4E-5	1.4E-5	1.4E-5
AVERAGES												
SPREADER,NO REINJ FROM D.C.				0.0	0.0	0.0	1.2E-5	0.0	1.2E-5	1.2E-5	1.2E-5	1.2E-5
MASS FIRED OVERFEED				0.0	0.0	0.0	1.4E-5	6.9E-6	2.1E-5	2.1E-5	2.1E-5	2.1E-5
HIGH							1.6E-5	1.4E-5	2.8E-5	2.8E-5	2.8E-5	2.8E-5
LOW							1.0E-5	1.4E-5	1.0E-5	1.0E-5	1.0E-5	1.0E-5

CORRELATIONS WITH -						
FLUE GAS OXYGEN, PERCENT	0.00	0.00	0.00	0.09	0.46	0.43
COAL FINES, PERCENT	0.00	0.00	0.00	-0.63	-0.52	-0.67
COAL VOLATILES	0.00	0.00	0.00	-0.43	0.54	0.30
GRATE HEAT RELEASE	0.00	0.00	0.00	-0.03	-0.33	-0.29
HYDROCARBONS	0.00	0.00	0.00	0.35	0.99	0.96
BOILER EFFICIENCY	0.00	0.00	0.00	-0.47	-0.98	-0.93
CARBON MONOXIDE	0.00	0.00	0.00	0.78	0.30	0.54

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

INDENO(1,2,3-CD)PYRENE

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	EMISSIONS NG/J: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	10.0	10600	0.0	0.0	0.0	3.1E-5	0.0	3.1E-5	3.1E-5	3.1E-5	3.1E-5
C 45	8.3	15.0	14500	0.0	0.0	1.1E-5	0.0	0.0	1.1E-5	1.1E-5	1.1E-5	1.1E-5
AVERAGE				0.0	0.0	5.6E-6	1.5E-5	0.0	2.1E-5	2.1E-5	2.1E-5	2.1E-5
HIGH						1.1E-5	3.1E-5		3.1E-5	3.1E-5	3.1E-5	3.1E-5
LOW						1.1E-5	3.1E-5		1.1E-5	1.1E-5	1.1E-5	1.1E-5

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	EMISSIONS NG/J: 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	4.1	12000	0.0	0.0	0.0	1.5E-5	1.5E-5	2.9E-5	2.9E-5	2.9E-5	2.9E-5
E 16	8.3	13.5	11700	0.0	2.0E-5	1.0E-5	1.4E-5	0.0	4.4E-5	3.5E-5	2.4E-5	2.4E-5
E 17	6.2	12.4	11600	2.0E-5	0.0	0.0	1.0E-5	0.0	3.0E-5	1.1E-5	1.0E-5	1.0E-5
F 22	6.0	10.9	7400	3.2E-5	3.2E-5	0.0	1.6E-5	1.6E-5	1.0E-4	5.0E-5	3.2E-5	3.2E-5
F 30	6.8	12.3	8000	0.0	0.0	1.4E-5	0.0	0.0	1.4E-5	1.4E-5	1.4E-5	1.4E-5
G 20	9.2	9.6	12200	0.0	0.0	0.0	1.3E-5	0.0	1.3E-5	1.3E-5	1.3E-5	1.3E-5
H 11	9.4	6.8	13500	0.0	0.0	0.0	1.4E-5	1.9E-5	3.3E-5	3.3E-5	3.3E-5	3.3E-5
J 16	8.9	8.2	12600	0.0	0.0	0.0	1.3E-5	1.3E-5	2.6E-5	2.6E-5	2.6E-5	2.6E-5
K 18	9.8	6.0	12200	1.4E-5	0.0	0.0	1.4E-5	0.0	2.8E-5	1.4E-5	1.4E-5	1.4E-5
AVERAGES												
SPREADER,NO REINJ FROM D.C.				1.0E-5	1.0E-5	4.7E-6	1.1E-5	3.2E-6	3.9E-5	2.4E-5	1.9E-5	1.8E-5
MASS FIRED OVERFEED				3.5E-6	0.0	0.0	1.4E-5	1.2E-5	2.9E-5	2.6E-5	2.6E-5	2.6E-5
HIGH				3.2E-5	3.2E-5	1.4E-5	1.6E-5	1.9E-5	1.0E-4	5.0E-5	3.3E-5	3.3E-5
LOW				1.4E-5	2.0E-5	1.0E-5	1.0E-5	1.3E-5	1.3E-5	1.1E-5	1.0E-5	1.0E-5
CORRELATIONS WITH -												
FLUE GAS OXYGEN, PERCENT				-0.63	-0.49	-0.31	0.41	0.18	-0.46			
COAL FINES, PERCENT				0.21	0.44	0.60	-0.44	-0.52	0.18			
COAL VOLATILES				-0.51	-0.57	-0.45	0.43	0.08	-0.51			
GRATE HEAT RELEASE				0.39	0.43	0.44	-0.49	-0.33	0.28			
HYDROCARBONS				-0.13	-0.07	-0.18	0.15	0.60	0.10			
BOILER EFFICIENCY				0.31	0.12	0.17	-0.20	-0.18	0.14			
CARBON MONOXIDE				0.38	0.48	0.24	-0.27	0.41	0.56			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

BENZO(G,H,I)PERYLENE

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	EMISSIONS NG/J: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
C 44	8.9	16.0	15000	0.0	1.2E-5	0.0	0.0	0.0	1.2E-5	8.8E-6	8.2E-8	1.8E-8
C 45	8.3	15.0	14500	0.0	0.0	1.1E-5	0.0	0.0	1.1E-5	1.1E-5	1.1E-5	1.1E-5
C 46	9.0	16.0	11900	0.0	0.0	0.0	0.0	1.2E-5	1.2E-5	1.2E-5	1.2E-5	1.2E-5
AVERAGE				0.0	3.9E-6	3.7E-6	0.0	3.9E-6	1.2E-5	1.1E-5	7.7E-6	7.6E-6
HIGH					1.2E-5	1.1E-5		1.2E-5	1.2E-5	1.2E-5	1.2E-5	1.2E-5
LOW					1.2E-5	1.1E-5		1.2E-5	1.1E-5	8.8E-6	8.2E-8	1.8E-8

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	EMISSIONS NG/J: 18.5 µM 45.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	4.1	12000	0.0	1.5E-5	0.0	3.2E-5	2.9E-5	7.6E-5	7.0E-5	6.2E-5	6.2E-5
E 16	8.3	13.5	11700	0.0	2.0E-5	0.0	1.6E-5	0.0	3.6E-5	2.7E-5	1.6E-5	1.6E-5
E 17	6.2	12.4	11600	0.0	2.0E-5	0.0	1.2E-5	0.0	3.2E-5	2.3E-5	1.2E-5	1.2E-5
F 22	6.0	10.9	7400	0.0	3.2E-5	0.0	5.4E-5	5.1E-5	1.4E-4	1.2E-4	1.0E-4	1.0E-4
F 30	6.8	12.3	8000	0.0	0.0	0.0	0.0	1.4E-5	1.4E-5	1.4E-5	1.4E-5	1.4E-5
G 20	9.2	9.6	12200	0.0	0.0	0.0	1.3E-5	0.0	1.3E-5	1.3E-5	1.3E-5	1.3E-5
H 11	9.4	6.8	13500	0.0	0.0	0.0	1.4E-5	2.2E-5	3.6E-5	3.6E-5	3.6E-5	3.6E-5
I 09	5.9	10.1	12300	0.0	0.0	0.0	1.3E-5	1.1E-5	2.3E-5	2.3E-5	2.3E-5	2.3E-5
J 15	7.9	3.0	12200	0.0	0.0	0.0	1.9E-5	0.0	1.9E-5	1.9E-5	1.9E-5	1.9E-5
J 16	8.9	8.2	12600	0.0	0.0	0.0	1.3E-5	1.3E-5	2.6E-5	2.6E-5	2.6E-5	2.6E-5
K 18	9.8	6.0	12200	1.4E-5	0.0	1.4E-5	5.3E-5	0.0	8.1E-5	6.8E-5	6.7E-5	6.7E-5
AVERAGES												
SPREADER,NO REINJ FROM D.C.				0.0	1.4E-5	0.0	1.9E-5	1.3E-5	4.6E-5	4.0E-5	3.2E-5	3.2E-5
MASS FIRED OVERFEED				2.3E-6	2.4E-6	2.3E-6	2.4E-5	1.3E-5	4.4E-5	4.0E-5	3.9E-5	3.9E-5
HIGH				1.4E-5	3.2E-5	1.4E-5	5.4E-5	5.1E-5	1.4E-4	1.2E-4	1.0E-4	1.0E-4
LOW				1.4E-5	1.5E-5	1.4E-5	1.2E-5	1.1E-5	1.3E-5	1.3E-5	1.2E-5	1.2E-5
CORRELATIONS WITH -												
FLUE GAS OXYGEN, PERCENT				0.36	-0.36	0.36	0.17	-0.16	-0.02			
COAL FINES, PERCENT				-0.27	0.40	-0.27	-0.31	-0.04	-0.10			
COAL VOLATILES				0.14	-0.50	0.14	-0.22	-0.53	-0.45			
GRATE HEAT RELEASE				-0.31	0.38	-0.31	-0.20	0.14	0.02			
HYDROCARBONS				-0.12	-0.14	-0.12	-0.08	0.31	0.03			
BOILER EFFICIENCY				-0.02	0.33	-0.02	0.12	-0.06	0.13			
CARBON MONOXIDE				-0.28	0.33	-0.20	0.19	0.76	0.47			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

3-METHYLCHOLANTHRENE

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT OZ	PCT FINES	INPUT VOLATILES NG/J	EMISSIONS NG/J 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	STACK GAS CLEAN-UP MULTI-CLONE	E.S.P.	BAGHOUSE
K 18	9.8	6.0	12200	0.0	0.0	0.0	1.4E-5	0.0	1.4E-5	1.4E-5	1.4E-5	1.4E-5

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

DIBENZPYRENES

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	*- - - EMISSIONS - - - - NG/J - - - - -* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
E 16	8.3	13.5	11700	0.0	0.0	0.0	1.0E-5	0.0	1.0E-5	1.0E-5	1.0E-5	1.0E-5
E 17	6.2	12.4	11600	0.0	0.0	0.0	0.0	1.2E-5	1.2E-5	1.2E-5	1.2E-5	1.2E-5
F 22	6.6	10.9	7400	0.0	3.2E-5	0.0	0.0	0.0	3.2E-5	1.7E-5	2.2E-7	1.3E-7
H 11	9.4	6.8	13500	0.0	0.0	0.0	0.0	2.2E-5	2.2E-5	2.2E-5	2.2E-5	2.2E-5
AVERAGES												
SPREADER, NO REINJ FROM D.C.				0.0	1.1E-5	0.0	3.3E-6	4.0E-6	1.8E-5	1.3E-5	7.3E-6	7.3E-6
MASS FIRED OVERFEED				0.0	0.0	0.0	0.0	2.2E-5	2.2E-5	2.2E-5	2.2E-5	2.2E-5
HIGH					3.2E-5		1.0E-5	2.2E-5	3.2E-5	2.2E-5	2.2E-5	2.2E-5
LOW					3.2E-5		1.0E-5	1.2E-5	1.0E-5	1.0E-5	2.2E-7	1.3E-7

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

CORONENE

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	*- - - EMISSIONS - - - - NG/J - - - - -* 10.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
E 16	8.3	13.5	11700	0.0	0.0	0.0	1.8E-5	0.0	1.8E-5	1.8E-5	1.8E-5	1.8E-5
E 17	6.2	12.4	11600	0.0	0.0	0.0	1.0E-5	0.0	1.0E-5	1.0E-5	1.0E-5	1.0E-5
F 22	6.8	10.9	7400	0.0	3.2E-5	0.0	2.2E-5	0.0	5.4E-5	4.0E-5	2.2E-5	2.2E-5
H 11	3.4	6.8	13500	0.0	0.0	0.0	1.4E-5	0.0	1.4E-5	1.4E-5	1.4E-5	1.4E-5
I 09	5.9	10.1	12300	0.0	0.0	0.0	1.1E-5	0.0	1.1E-5	1.1E-5	1.1E-5	1.1E-5
J 15	7.9	3.0	12200	0.0	0.0	0.0	1.2E-5	0.0	1.2E-5	1.2E-5	1.2E-5	1.2E-5
J 16	8.9	8.2	12600	0.0	0.0	0.0	1.3E-5	0.0	1.3E-5	1.3E-5	1.3E-5	1.3E-5
K 18	9.8	6.0	12200	0.0	0.0	0.0	1.4E-5	0.0	1.4E-5	1.4E-5	1.4E-5	1.4E-5
AVERAGES												
SPREADER,NO REINJ FROM D.C.				0.0	1.1E-5	0.0	1.7E-5	0.0	2.7E-5	2.2E-5	1.7E-5	1.7E-5
MASS FIRED OVERFEED				0.0	0.0	0.0	1.3E-5	0.0	1.3E-5	1.3E-5	1.3E-5	1.3E-5
HIGH					3.2E-5		2.2E-5		5.4E-5	4.0E-5	2.2E-5	2.2E-5
LOW					3.2E-5		1.0E-5		1.0E-5	1.0E-5	1.0E-5	1.0E-5
CORRELATIONS WITH -												
FLUE GAS OXYGEN, PERCENT				0.00	-0.46	0.00	-0.03	0.00	-0.36			
COAL FINES, PERCENT				0.00	0.23	0.00	0.30	0.00	0.26			
COAL VOLATILES				0.00	-0.95	0.00	-0.75	0.00	-0.93			
GRATE HEAT RELEASE				0.00	0.71	0.00	0.55	0.00	0.70			
HYDROCARBONS				0.00	0.00	0.00	0.09	0.00	0.02			
BOILER EFFICIENCY				0.00	0.06	0.00	-0.01	0.00	0.04			
CARBON MONOXIDE				0.00	0.86	0.00	0.73	0.00	0.86			

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15918-564

RANGE IN DATA - - - - NG/J

	SPREADER W/REINJ. FROM D.C.			SPREADER, NO REINJ FROM D.C.			MASS FIRED OVERFEED		
	LOW	AVERAGE	HIGH	LOW	AVERAGE	HIGH	LOW	AVERAGE	HIGH
LITHIUM	4.1E-2	1.0E+0	2.4E+0	5.0E-3	2.8E-2	8.7E-2	2.2E-3	1.7E-2	3.7E-2
BERYLLIUM	1.3E-4	1.5E-2	3.1E-2	1.8E-3	4.1E-3	9.3E-3	1.6E-3	5.6E-3	1.7E-2
BORON	2.8E-3	1.7E+0	6.1E+0	1.3E-2	7.6E-2	1.3E-1	1.4E-1	8.9E-1	2.3E+0
FLUORINE	6.9E-3	2.1E-2	2.8E-2	2.9E-3	4.6E-3	9.1E-3	2.1E-3	1.9E-2	5.7E-2
SODIUM	5.7E+0	2.8E+1	6.4E+1	1.7E-1	2.3E+0	8.9E+0	2.0E+0	3.5E+0	6.3E+0
MAGNESIUM	4.7E+0	1.6E+2	3.5E+2	2.0E-1	1.9E+0	7.2E+0	1.5E-1	1.0E+0	3.9E+0
ALUMINUM	3.2E+1	9.5E+2	2.0E+3	2.4E+1	1.5E+2	3.8E+2	3.7E+0	3.8E+1	1.4E+2
SILICON	7.7E+1	9.8E+2	2.0E+3	2.9E+1	1.2E+2	2.8E+2	4.5E+0	1.8E+1	4.7E+1
PHOSPHORUS	1.4E+0	7.5E+0	1.7E+1	2.2E-1	6.0E-1	1.0E+0	2.0E-1	7.0E-1	1.2E+0
SULFUR	1.3E+1	2.3E+1	3.8E+1	5.7E-1	7.8E+1	2.3E+2	4.7E+0	3.0E+2	1.5E+3
CHLORINE	7.5E-2	2.2E-1	3.1E-1	8.0E-4	8.5E-2	4.0E-1	3.7E-3	2.9E-2	1.3E-1
POTASSIUM	1.8E+0	1.1E+1	3.0E+1	2.3E+0	8.9E+0	2.4E+1	1.0E+0	7.2E+0	1.3E+1
CALCIUM	3.8E+0	3.4E+2	1.0E+3	1.7E+0	3.6E+0	5.5E+0	7.0E-1	2.9E+0	5.9E+0
SCANDIUM	9.1E-2	1.3E-1	2.4E-1	1.8E-2	3.8E-2	6.3E-2	7.3E-3	1.8E-2	2.9E-2
TITANIUM	3.7E-4	2.0E+1	4.9E+1	4.5E+0	1.6E+1	3.3E+1	1.2E+0	3.9E+0	1.0E+1
VANADIUM	2.8E-3	6.2E-1	1.4E+0	1.5E-1	4.1E-1	7.0E-1	3.2E-2	1.8E-1	3.5E-1
CHROMIUM	6.6E-3	1.4E+0	3.1E+0	1.7E-1	2.3E+0	3.6E+0	6.2E-1	6.2E+0	2.1E+1
MANGANESE	1.3E-2	2.6E+0	7.2E+0	4.4E-2	1.9E-1	4.1E-1	1.0E-1	1.1E+0	2.9E+0
IRON	3.7E-1	1.6E+2	5.5E+2	1.4E+1	3.7E+1	7.9E+1	9.9E+0	6.1E+1	1.5E+2
COBALT	2.3E-3	1.1E-1	2.8E-1	8.3E-2	1.6E-1	2.2E-1	1.8E-2	2.3E-1	6.7E-1
NICKEL	1.4E-2	3.6E+0	8.9E+0	2.8E-1	1.2E+0	2.6E+0	3.6E-1	4.6E+0	1.2E+1
COPPER	7.3E-3	5.3E-1	1.3E+0	2.7E-2	1.8E-1	4.3E-1	6.8E-2	1.2E+0	2.3E+0
ZINC	1.3E-2	2.9E-1	5.7E-1	1.1E-2	7.6E-2	2.9E-1	5.1E-2	9.2E-1	2.4E+0
GALLIUM	3.3E-2	1.0E-1	2.1E-1	9.5E-3	4.5E-2	1.4E-1	1.1E-2	9.0E-2	1.9E-1
GERMANIUM	8.6E-3	3.1E-2	6.2E-2	6.4E-3	3.2E-2	6.1E-2	1.6E-2	2.6E-1	9.2E-1
ARSENIC	1.2E-4	9.5E-2	3.6E-1	1.5E-2	4.6E-2	1.1E-1	2.5E-2	4.4E-1	1.1E+0
SELENIUM	4.8E-4	5.7E-2	1.4E-1	1.1E-2	3.0E-2	6.3E-2	2.4E-3	5.1E-2	2.8E-1
BROMINE	3.4E-3	5.2E-3	7.9E-3	4.1E-3	1.3E-2	2.8E-2	2.0E-3	3.7E-2	1.1E-1
RUBIDIUM	1.0E-1	5.8E-1	1.4E+0	1.9E-3	7.5E-2	2.4E-1	1.1E-2	8.5E-2	1.8E-1
STRONTIUM	1.0E+0	3.5E+1	1.4E+2	1.8E-1	7.8E-1	1.7E+0	8.6E-2	3.3E-1	1.0E+0
YTTRIUM	3.1E-2	1.5E-1	3.4E-1	5.4E-2	7.9E-2	1.1E-1	6.6E-3	7.7E-2	2.8E-1
ZIRCONIUM	1.8E-2	7.4E-1	2.1E+0	2.1E-1	3.7E-1	7.6E-1	1.7E-2	1.1E-1	2.5E-1
NIOBIUM	4.0E-3	5.3E-2	1.4E-1	1.1E-2	2.2E-2	4.0E-2	3.9E-3	1.5E-2	5.5E-2
MOLYBDENUM	3.7E-3	2.2E-1	6.0E-1	1.7E-2	7.5E-2	1.3E-1	6.8E-2	2.0E-1	3.4E-1
RUTHENIUM	1.7E-3	2.6E-3	3.4E-3	5.5E-4	1.1E-3	1.4E-3	3.0E-4	7.3E-3	2.1E-2
RHODIUM	6.5E-4	1.1E-3	2.1E-3	2.4E-4	6.1E-4	1.0E-3	1.8E-4	3.4E-3	8.6E-3
PALADIUM	3.1E-3	3.9E-3	4.9E-3	6.9E-4	1.5E-3	2.5E-3	5.6E-4	8.3E-3	2.2E-2
SILVER	1.2E-2	4.3E-1	2.4E+0	3.4E-4	3.9E-2	2.3E-1	1.3E-3	1.9E-2	7.0E-2
CADMIUM	1.8E-3	7.2E-3	1.5E-2	3.2E-3	1.1E-2	2.8E-2	5.3E-3	3.8E-2	1.3E-1
INDIUM	8.4E-4	2.7E-2	1.6E-1	3.4E-4	1.1E-3	2.3E-3	8.4E-4	5.5E-3	2.2E-2
TIN	6.4E-4	2.2E-2	4.3E-2	6.1E-3	1.8E-2	3.9E-2	1.7E-2	4.2E-2	9.1E-2
ANTIMONY	5.7E-3	9.1E-3	1.6E-2	2.6E-3	4.8E-3	1.1E-2	6.0E-3	2.0E-2	4.0E-2
TELLURIUM	5.1E-4	3.4E-3	5.6E-3	6.6E-4	2.5E-3	5.6E-3	3.9E-4	1.3E-2	4.4E-2
IODINE	7.3E-4	1.1E-3	1.5E-3	2.0E-3	3.6E-3	6.5E-3	6.7E-5	3.7E-3	8.3E-3
CESIUM	1.0E-2	6.0E-2	1.4E-1	1.3E-3	4.2E-3	7.3E-3	2.3E-3	3.8E-3	6.3E-3
BARIUM	1.4E-1	2.6E+1	1.4E+2	2.6E-1	4.6E-1	8.0E-1	3.9E-2	4.7E-1	2.0E+0
LANTHANUM	9.2E-3	1.5E-1	3.5E-1	1.7E-2	3.5E-2	6.4E-2	2.5E-3	1.3E-2	2.8E-2
CERIUM	2.6E-2	2.4E-1	4.9E-1	2.3E-2	8.3E-2	1.6E-1	7.1E-3	6.2E-2	2.6E-1
PRASEODYMIUM	2.3E-3	2.4E-2	4.9E-2	7.1E-3	1.5E-2	2.2E-2	2.8E-3	7.3E-3	1.8E-2
NEODYMIUM	7.9E-3	8.6E-2	2.8E-1	2.3E-2	3.9E-2	7.9E-2	9.5E-3	3.6E-2	7.1E-2
SAMARIUM	4.6E-3	1.9E-2	3.5E-2	5.5E-3	1.2E-2	1.7E-2	3.0E-3	1.4E-2	2.9E-2
EUROPIUM	2.9E-3	1.2E-2	3.4E-2	1.9E-3	2.9E-3	4.3E-3	7.4E-4	8.9E-3	1.8E-2

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

	RANGE IN DATA - - - - NG/J								
	SPREADER W/REINJ. FROM D.C.			SPREADER, NO REINJ FROM D.C.			MASS FIRED OVERFEED		
	LOW	AVERAGE	HIGH	LOW	AVERAGE	HIGH	LOW	AVERAGE	HIGH
GADOLINIUM	3.5E-3	1.9E-2	6.8E-2	5.6E-3	9.0E-3	1.6E-2	1.5E-3	1.3E-2	2.8E-2
TERBIUM	1.5E-3	4.1E-3	7.0E-3	1.0E-3	1.5E-3	2.2E-3	4.4E-4	3.3E-3	7.9E-3
DYSPROSIUM	3.6E-3	1.8E-2	3.5E-2	6.7E-3	1.7E-2	2.8E-2	1.3E-3	1.3E-2	2.8E-2
HOLMIUM	1.5E-3	3.2E-3	4.3E-3	1.8E-3	2.5E-3	3.3E-3	6.7E-4	3.4E-3	8.5E-3
ERBIUM	4.4E-3	6.1E-3	7.1E-3	3.6E-3	5.8E-3	9.5E-3	1.0E-3	1.0E-2	2.6E-2
THULIUM	6.7E-4	6.8E-3	1.2E-2	2.4E-4	7.1E-4	1.3E-3	1.2E-4	8.7E-3	1.5E-2
YTTERBIUM	3.4E-3	5.6E-3	7.2E-3	3.1E-3	4.2E-3	7.2E-3	1.8E-3	9.3E-3	2.3E-2
LUTETIUM	5.8E-4	1.1E-3	1.5E-3	3.4E-4	4.2E-4	5.5E-4	1.2E-4	2.8E-3	8.5E-3
HAFNIUM	7.3E-4	4.1E-3	7.8E-3	1.0E-3	3.6E-3	6.6E-3	7.6E-4	8.7E-3	2.2E-2
TANTALUM	1.2E-2	1.8E-2	2.0E-2	2.2E-3	3.7E-3	6.9E-3	1.0E-3	1.7E-2	3.8E-2
TUNGSTEN	5.2E-3	8.2E-3	1.3E-2	8.8E-4	2.6E-3	4.2E-3	5.7E-3	1.6E-2	3.2E-2
RHENIUM	2.3E-3	2.4E-3	2.7E-3	6.6E-4	8.0E-4	1.2E-3	2.4E-4	6.1E-3	1.7E-2
OSMIUM	1.7E-3	4.3E-3	6.8E-3	7.2E-4	1.2E-3	2.5E-3	3.3E-4	8.6E-3	2.1E-2
IRIDIUM	2.1E-3	2.8E-3	3.4E-3	3.6E-4	7.2E-4	1.2E-3	2.4E-4	6.1E-3	1.7E-2
PLATINUM	1.7E-3	1.1E-2	2.8E-2	3.6E-4	7.5E-4	1.2E-3	3.9E-4	9.3E-3	2.1E-2
GOLD	5.6E-4	2.7E-3	6.0E-3	2.4E-4	4.4E-4	7.6E-4	8.9E-5	3.4E-3	8.5E-3
MERCURY	3.3E-4	1.8E-3	7.2E-3	5.5E-4	1.3E-3	2.8E-3	4.8E-6	5.0E-4	9.2E-4
THALLIUM	3.3E-4	1.1E-2	1.6E-2	4.0E-3	1.1E-2	2.5E-2	2.9E-2	4.7E-2	6.7E-2
LEAD	1.3E-2	1.6E-1	3.7E-1	4.5E-2	8.4E-2	1.4E-1	1.9E-2	2.9E-1	6.6E-1
BISMUTH	1.0E-3	6.4E-3	1.2E-2	2.2E-4	1.0E-3	1.8E-3	8.4E-4	5.3E-3	9.0E-3
THORIUM	3.1E-3	7.8E-3	1.4E-2	4.6E-3	7.4E-3	1.3E-2	1.1E-3	8.6E-3	2.2E-2
URANIUM	3.9E-3	8.0E-3	1.5E-2	5.5E-3	1.0E-2	1.7E-2	3.1E-3	7.4E-3	1.4E-2
PHENANTHRENE	3.0E-4	3.8E-3	8.6E-3	1.7E-4	2.2E-3	1.0E-2	1.0E-4	4.6E-3	3.0E-2
ANTHRACENE	1.6E-5	1.2E-4	2.7E-4	4.5E-5	7.7E-5	1.3E-4	3.1E-5	4.3E-3	2.9E-2
METHYLANTHRACENES/PHENANTHRENES	2.5E-5	2.7E-4	8.1E-4	7.0E-5	1.0E-3	5.1E-3	1.1E-4	3.9E-4	1.1E-3
FLUORANTHENE	2.6E-5	1.0E-3	2.4E-3	4.1E-5	4.7E-4	2.2E-3	2.3E-5	4.3E-3	2.9E-2
PYRENE	3.5E-5	3.3E-4	6.7E-4	2.8E-5	1.3E-4	2.2E-4	5.9E-5	1.7E-4	3.5E-4
METHYLPYRENE/FLUORANTHENE	1.2E-5	8.2E-5	2.3E-4	2.5E-5	1.0E-4	3.5E-4	1.4E-5	5.3E-5	1.2E-4
BENZO(C)PHENANTHRENE	1.0E-5	3.0E-5	5.8E-5	1.4E-5	2.9E-5	4.0E-5	3.3E-5	4.6E-5	5.9E-5
BENZ(A)ANTHRACENE	2.0E-5	3.9E-5	4.7E-5	1.0E-5	1.7E-5	3.0E-5	1.4E-5	3.6E-5	7.9E-5
CHRYSENE	3.1E-5	6.2E-5	1.2E-4	1.3E-5	5.7E-5	1.1E-4	1.4E-5	5.8E-5	1.4E-4
METHYLCHRYSENES	1.0E-5	1.9E-5	2.6E-5	1.0E-5	2.2E-5	5.1E-5	1.2E-5	2.8E-5	6.1E-5
DIMETHYLBENZANTHRACENES	1.0E-5	1.0E-5	1.8E-5						
BENZOFLUORANTHENES	1.0E-5	5.8E-5	1.5E-4	1.3E-5	2.9E-5	6.7E-5	1.3E-5	4.4E-5	1.3E-4
BENZO(E)PYRENE	1.0E-5	1.7E-5	2.2E-5	1.0E-5	2.4E-5	5.1E-5	1.2E-5	2.2E-5	5.0E-5
BENZO(A)PYRENE	1.0E-5	1.6E-5	2.3E-5	1.0E-5	1.0E-5	1.0E-5	1.4E-5	2.1E-5	2.8E-5
PERYLENE	1.0E-5	1.4E-5	2.0E-5	1.0E-5	1.2E-5	1.6E-5	1.4E-5	2.1E-5	2.8E-5
INDENO(1,2,3-CD)PYRENE	1.1E-5	2.1E-5	3.1E-5	1.3E-5	3.9E-5	1.0E-4	2.6E-5	2.9E-5	3.3E-5
BENZO(G,H,I)PERYLENE	1.1E-5	1.2E-5	1.2E-5	1.3E-5	4.6E-5	1.4E-4	1.9E-5	4.4E-5	8.1E-5
3-METHYLCHOLANTHRENE							1.4E-5	1.4E-5	1.4E-5
DIBENZPYRENES				1.0E-5	1.8E-5	3.2E-5	2.2E-5	2.2E-5	2.2E-5
CORONENE				1.0E-5	2.7E-5	5.4E-5	1.1E-5	1.3E-5	1.4E-5

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

APPENDIX B

COMPUTER GENERATED TABLES OF INORGANIC TRACE ELEMENT AND PAH EMISSIONS IN UNITS OF µg/DRY SCM

	Page		Page		Page
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Beryllium	154	Molybdenum	186	Iridium	218
Boron	155	Ruthenium	187	Platinum	219
Fluorine	156	Rhodium	188	Gold	220
Sodium	157	Paladium	189	Mercury	221
Magnesium	158	Silver	190	Thallium	222
Aluminium	159	Cadmium	191	Lead	223
Silicon	160	Indium	192	Bismuth	224
Phosphorus	161	Tin	193	Thorium	225
Sulfur	162	Antimony	194	Uranium	226
Chlorine	163	Tellurium	195	Phenanthrene	227
Potassium	164	Iodine	196	Anthracene	228
Calcium	165	Cesium	197	Methylanthracenes/Phenanthrenes	229
Scandium	166	Barium	198	Fluoranthene	230
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Vanadium	168	Cerium	200	Methylpyrene/Fluoranthene	232
Chromium	169	Praseodymium	201	Benzo(c)phenanthrene	233
Manganese	170	Neodymium	202	Benz(a)anathracene	234
Iron	171	Samarium	203	Chrysene	235
Cobalt	172	Europium	204	Methylchrysenes	236
Nickel	173	Gadolinium	205	Dimethylbenzanthracenes	237
Copper	174	Terbium	206	Benzfluoranthenes	238
Zinc	175	Dysprosium	207	Benzo(e)pyrene	239
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LITHIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	1.0E+0	1.2E+2	1.6E+0	1.4E+1	1.4E+2	1.1E+2	1.6E+1	1.6E+1
B 31	6.0	2670	1.0E+0	9.5E+1	1.6E+0	1.5E+1	1.1E+2	8.7E+1	1.7E+1	1.6E+1
B 33	6.1	2130	8.8E-1	1.9E+2	1.6E+0	4.5E+1	2.4E+2	1.9E+2	4.8E+1	4.7E+1
C 44	8.9	4380	4.4E+3	1.4E+1	1.0E-1	0.0	4.4E+3	4.0E+2	3.1E+1	6.7E+0
C 45	8.3	4360	5.4E+3	1.6E+1	5.1E-1	0.0	5.4E+3	4.9E+2	3.9E+1	8.7E+0
C 46	9.0	3230	3.5E+3	1.8E+1	2.0E-1	0.0	3.5E+3	3.2E+2	2.5E+1	5.5E+0
AVERAGE			2.2E+3	7.6E+1	9.4E-1	1.2E+1	2.3E+3	2.7E+2	2.9E+1	1.7E+1
HIGH			5.4E+3	1.9E+2	1.6E+0	4.5E+1	5.4E+3	4.9E+2	4.8E+1	4.7E+1
LOW			8.8E-1	1.4E+1	1.0E-1	1.4E+1	1.1E+2	8.7E+1	1.6E+1	5.5E+0

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	13.2	2670	1.5E+1	1.5E+1	0.0	0.0	3.0E+1	8.5E+0	2.1E-1	4.5E-1
E 16	4.3	2760	1.0E+1	1.2E+0	1.8E-1	0.0	1.2E+1	1.2E+0	2.6E-1	2.3E-1
E 17	6.2	2770	2.2E+1	7.3E+0	1.1E-1	0.0	2.9E+1	4.8E+0	3.1E-1	2.2E-1
F 22	6.0	2980	2.5E+1	8.6E+0	4.3E-1	0.0	3.4E+1	6.0E+0	6.6E-1	5.6E-1
F 38	6.8	2890	2.3E+1	2.5E+0	2.8E-2	0.0	2.5E+1	2.1E+0	2.1E-1	1.3E-1
G 15	8.7	3230	1.6E+2	2.9E+1	5.3E-2	0.0	1.9E+2	2.1E+1	1.4E+0	8.3E-1
G 20	9.2	2320	6.6E+1	2.5E+1	4.9E-1	0.0	9.2E+1	1.6E+1	1.1E+0	8.6E-1
H 11	9.4	1980	1.0E+1	2.1E+0	2.9E-1	0.0	1.2E+1	1.7E+0	3.8E-1	4.7E-1
I 09	5.9	2700	6.6E+1	1.9E+1	1.8E+1	0.0	1.0E+2	3.0E+1	1.8E+1	1.9E+1
I 18	7.8	1670	3.9E+1	4.2E+1	1.3E+0	2.5E+0	8.5E+1	2.8E+1	4.4E+0	5.1E+0
J 15	7.9	1550	1.7E+0	3.6E+1	5.5E-1	2.1E+0	4.1E+1	4.1E+1	2.9E+0	3.2E+0
J 16	8.9	2570	8.3E-1	3.5E+0	4.6E-1	0.0	4.8E+0	4.8E+0	4.9E-1	5.2E-1
K 18	9.8	1280	1.8E+1	0.0	5.1E-1	4.3E-1	1.9E+1	1.5E+0	1.1E+0	1.2E+0
AVERAGES										
SPREADER,NO RLINJ FROM D.C.			5.2E+1	1.2E+1	2.2E-1	0.0	6.4E+1	8.6E+0	6.6E-1	4.7E-1
MASS FIRED OVERFEED			2.2E+1	1.7E+1	3.0E+0	7.2E-1	4.2E+1	1.7E+1	4.9E+0	4.3E+0
HIGH			1.6E+2	4.2E+1	1.8E+1	2.5E+0	1.9E+2	4.1E+1	1.8E+1	1.9E+1
LOW			8.3E-1	1.2E+0	2.8E-2	4.3E-1	4.8E+0	1.2E+0	2.1E-1	1.3E-1

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

BERYLLIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210					3.6E-1			
A 35	6.0	3140					3.8E+0			
B 30	6.0	2710	4.8E+0	6.0E+0	7.8E-3	1.4E-1	1.3E+1	6.6E+0	2.4E-1	1.7E-1
B 31	6.0	2670	2.9E+1	6.8E+0	5.4E-3	1.5E-1	3.8E+1	9.3E+0	4.2E-1	2.1E-1
B 33	6.1	2130	7.1E+1	1.4E+1	5.3E-3	1.5E-1	8.5E+1	1.7E+1	7.5E-1	2.8E-1
C 44	8.9	4360	2.9E+1	6.4E-1	5.0E-4	0.0	3.0E+1	3.1E+0	2.1E-1	4.5E-2
C 45	8.3	4360	6.8E+1	8.3E-1	5.1E-4	3.8E-1	6.9E+1	7.0E+0	8.6E-1	4.9E-1
C 46	9.0	3230	5.8E+1	1.4E+0	5.1E-4	0.0	6.0E+1	6.2E+0	4.2E-1	9.0E-2
AVERAGE			3.3E+1	4.2E+0	2.5E-3	1.0E-1	3.7E+1	6.6E+0	8.8E-1	6.8E-1
HIGH			7.1E+1	1.4E+1	7.8E-3	3.8E-1	8.5E+1	1.7E+1	3.8E+0	3.8E+0
LOW			4.8E+0	6.4E-1	5.0E-4	1.4E-1	3.6E-1	3.6E-1	2.1E-1	4.5E-2

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 10.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	1.1E+0	4.9E+0	0.0	0.0	6.0E+0	2.8E+0	4.2E-2	9.1E-2
E 16	8.3	2760	7.6E+0	1.2E+0	2.3E-3	0.0	8.9E+0	9.2E-1	6.4E-2	3.8E-2
E 17	6.2	2770	2.4E+0	2.4E+0	1.6E-3	0.0	4.9E+0	1.4E+0	3.6E-2	2.1E-2
F 22	6.0	2980	8.2E+0	1.2E+0	6.9E-3	0.0	9.4E+0	9.0E-1	7.2E-2	4.4E-2
F 30	6.8	2890	2.3E+1	1.1E+0	1.4E-2	0.0	2.4E+1	1.4E+0	1.8E-1	1.1E-1
G 15	8.7	3230	4.9E+0	1.3E+0	2.3E-1	0.0	6.5E+0	1.1E+0	2.7E-1	2.5E-1
G 20	9.2	2320	6.6E+0	5.0E-1	4.1E-2	0.0	7.2E+0	5.3E-1	9.1E-2	6.9E-2
H 11	9.4	1960	3.3E+1	1.5E+0	1.2E-2	0.0	3.5E+1	1.9E+0	2.6E-1	5.4E-1
I 09	5.9	2700	1.3E+1	2.8E+0	6.0E-1	0.0	1.7E+1	2.6E+0	7.1E-1	8.4E-1
I 18	7.8	1670	1.6E+1	4.2E+0	1.3E-1	4.2E-2	2.0E+1	3.0E+0	3.1E-1	4.7E-1
J 15	7.9	1550	1.3E+0	2.2E+0	1.1E-1	1.4E-1	3.8E+0	3.8E+0	2.7E-1	3.0E-1
J 16	8.9	2570	1.3E-1	4.2E+0	1.1E-1	3.6E-2	4.5E+0	4.5E+0	1.8E-1	2.2E-1
K 18	9.8	1280	3.1E+0	0.0	5.7E-2	2.9E-1	3.4E+0	4.4E-1	3.6E-1	3.9E-1
AVERAGES										
SPREADER,NO REINJ FROM D.C.			8.8E+0	1.3E+0	4.9E-2	0.0	1.0E+1	1.0E+0	1.2E-1	8.9E-2
MASS FIRED OVERFEED			9.7E+0	2.8E+0	1.5E-1	7.2E-2	1.3E+1	2.7E+0	3.1E-1	4.1E-1
HIGH			3.3E+1	4.9E+0	6.0E-1	2.9E-1	3.5E+1	4.5E+0	7.1E-1	8.4E-1
LOW			1.3E-1	5.0E-1	1.6E-3	3.6E-2	3.4E+0	4.4E-1	3.6E-2	2.1E-2

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15918-564

BORON

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - EMISSIONS - µG/DRY SCM* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210					4.8E+2			
A 35	6.0	3140					7.5E+0			
B 30	6.0	2710	1.9E+2	1.0E+2	4.7E+1	4.2E+0	3.5E+2	1.4E+2	5.4E+1	5.2E+1
B 31	4.0	2670	5.8E+2	7.1E+1	1.6E+2	4.4E+0	8.2E+2	2.7E+2	1.7E+2	1.7E+2
B 33	6.1	2130	5.3E+2	1.0E+2	1.6E+2	4.5E+0	7.9E+2	2.8E+2	1.7E+2	1.6E+2
C 44	8.9	4380	1.2E+4	3.2E+2	1.5E+0	1.1E+2	1.2E+4	1.4E+3	2.0E+2	1.3E+2
C 45	8.3	4360	1.4E+4	2.7E+2	3.0E+0	1.2E+2	1.4E+4	1.5E+3	2.2E+2	1.4E+2
C 46	9.0	3230	2.3E+3	1.7E+2	1.5E+1	0.0	2.5E+3	3.5E+2	3.3E+1	1.9E+1
AVERAGE			3.6E+3	1.3E+2	4.8E+1	3.0E+1	3.9E+3	5.5E+2	1.7E+2	1.5E+2
HIGH			1.4E+4	3.2E+2	1.6E+2	1.2E+2	1.4E+4	1.5E+3	4.8E+2	4.8E+2
LOW			1.9E+2	7.1E+1	1.5E+0	4.2E+0	7.5E+0	7.5E+0	7.5E+0	7.5E+0

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - EMISSIONS - µG/DRY SCM* 10.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	13.2	2670	6.1E+1	3.0E+2	0.0	0.0	3.6E+2	1.7E+2	2.5E+0	5.4E+0
E 16	8.3	2760	1.0E+2	2.7E+1	1.8E+2	0.0	3.1E+2	2.0E+2	1.9E+2	1.8E+2
E 17	6.2	2770	7.3E+1	9.7E+1	1.1E+0	0.0	1.7E+2	5.7E+1	2.3E+0	1.7E+0
F 22	6.0	2980	2.5E+1	1.2E+1	8.6E+0	0.0	4.5E+1	1.6E+1	8.8E+0	8.7E+0
F 30	6.8	2690	2.3E+1	5.5E+0	4.9E+0	0.0	3.3E+1	8.6E+0	5.1E+0	5.0E+0
G 15	8.7	3230	8.2E+1	4.3E+1	1.5E+2	0.0	2.8E+2	1.8E+2	1.5E+2	1.5E+2
G 20	9.2	2320	1.1E+2	2.5E+1	8.2E+1	0.0	2.2E+2	9.9E+1	8.3E+1	8.2E+1
H 11	9.4	1980	2.2E+2	2.1E+1	5.3E+1	0.0	3.0E+2	7.1E+1	5.4E+1	5.6E+1
I 09	5.9	2700	2.0E+2	2.8E+2	6.0E+3	0.0	6.4E+3	6.1E+3	6.0E+3	6.0E+3
I 18	7.8	1670	1.6E+2	8.3E+1	2.7E+3	7.6E+0	2.9E+3	2.7E+3	2.7E+3	2.7E+3
J 15	7.9	1550	1.7E+1	2.2E+2	1.1E+3	7.0E-2	1.3E+3	1.3E+3	1.1E+3	1.1E+3
J 16	8.9	2570	5.0E-1	2.1E+2	2.9E+3	2.2E+0	3.1E+3	3.1E+3	2.9E+3	2.9E+3
K 10	9.8	1280	1.8E+2	0.0	5.7E+2	4.3E+1	7.9E+2	6.1E+2	6.1E+2	6.1E+2
AVERAGES										
SPREADER, NO REINJ FROM D.C.			6.9E+1	3.5E+1	7.2E+1	0.0	1.8E+2	9.4E+1	7.3E+1	7.3E+1
MASS FIRED OVERFEED			1.2E+2	1.6E+2	1.9E+3	7.5E+0	2.2E+3	2.0E+3	1.9E+3	1.9E+3
HIGH			2.2E+2	3.0E+2	6.0E+3	4.3E+1	6.4E+3	6.1E+3	6.0E+3	6.0E+3
LOW			5.0E-1	5.5E+0	1.1E+0	7.0E-2	3.3E+1	8.6E+0	2.3E+0	1.7E+0

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

FLUORINE

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS - µG/DRY SCM: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.8	2710	4.8E+0	2.3E+0	3.1E+0	5.6E+1	6.6E+1	6.1E+1	5.9E+1	5.9E+1
B 31	6.8	2670	9.7E+0	1.3E+0	8.1E+0	5.8E+1	7.7E+1	6.8E+1	6.6E+1	6.6E+1
B 33	6.1	2130	8.8E+0	2.2E+0	1.6E+0	6.0E+0	1.9E+1	1.9E+1	7.7E+0	7.6E+0
C 44	8.9	4380	4.4E+1	5.5E+0	2.5E+0	1.3E+0	5.3E+1	1.2E+1	4.1E+0	3.9E+0
C 45	8.3	4360	4.1E+1	7.6E+0	3.0E+0	7.7E+0	5.9E+1	2.0E+1	1.1E+1	1.1E+1
C 46	9.0	3230	2.3E+1	9.3E+0	1.0E-1	0.0	3.3E+1	9.2E+0	3.3E-1	1.5E-1
AVERAGE			2.2E+1	4.7E+0	3.1E+0	2.2E+1	5.1E+1	3.0E+1	2.5E+1	2.5E+1
HIGH			4.4E+1	9.3E+0	8.1E+0	5.8E+1	7.7E+1	6.8E+1	6.6E+1	6.6E+1
LOW			4.8E+0	1.3E+0	1.0E-1	1.3E+0	1.9E+1	9.2E+0	3.3E-1	1.5E-1

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS - µG/DRY SCM: 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	3.0E+0	1.2E+0	0.0	0.0	4.2E+0	7.5E-1	3.8E-2	6.3E-2
E 16	8.3	2760	5.1E+0	6.1E-1	1.8E+0	0.0	7.5E+0	2.3E+0	1.9E+0	1.9E+0
E 17	6.2	2770	2.2E+1	2.2E+0	3.2E-1	0.0	2.5E+1	2.2E+0	4.9E-1	4.2E-1
F 22	6.0	2980	4.9E+0	2.9E+0	4.3E+0	0.0	1.2E+1	6.0E+0	4.3E+0	4.3E+0
F 30	6.8	2890	3.4E+0	2.7E+0	1.4E+0	0.0	7.6E+0	3.0E+0	1.4E+0	1.4E+0
G 15	5.7	3230	4.9E+0	4.3E+0	1.5E+0	0.0	1.1E+1	4.1E+0	1.6E+0	1.6E+0
G 20	9.2	2320	2.2E+0	1.3E+0	3.3E+0	0.0	6.7E+0	4.0E+0	3.3E+0	3.3E+0
H 11	8.4	1980	2.2E+0	3.1E-1	5.3E+0	0.0	7.8E+0	5.5E+0	5.3E+0	5.3E+0
I 09	5.9	2700	4.6E+0	1.9E+0	1.2E+2	0.0	1.3E+2	1.2E+2	1.2E+2	1.2E+2
I 18	7.8	1670	3.1E+0	2.8E+0	6.7E+0	1.7E+1	2.9E+1	2.5E+1	2.4E+1	2.4E+1
J 15	7.9	1550	3.3E-1	7.3E-1	5.5E+0	7.0E+0	1.4E+1	1.4E+1	1.2E+1	1.3E+1
J 16	6.9	2570	1.2E-1	7.1E-1	1.1E+1	7.2E+0	2.0E+1	2.0E+1	1.9E+1	1.9E+1
K 18	9.8	1280	2.5E+0	0.0	5.7E+1	5.7E+1	1.2E+2	1.1E+2	1.1E+2	1.1E+2
AVERAGES SPREADER,NO REINJ FROM D.C.			7.1E+0	2.3E+0	2.1E+0	0.0	1.2E+1	3.6E+0	2.2E+0	2.1E+0
MASS FIRED OVERFEED			2.3E+0	1.1E+0	2.9E+1	1.3E+1	4.5E+1	4.3E+1	4.2E+1	4.2E+1
HIGH			2.2E+1	4.3E+0	1.2E+2	5.7E+1	1.3E+2	1.2E+2	1.2E+2	1.2E+2
LOW			1.2E-1	3.1E-1	3.2E-1	7.0E+0	4.2E+0	7.5E-1	3.0E-2	6.3E-2

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

SODIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL	ASH	SODIUM	*- - - EMISSIONS - µG/DRY SCM* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710		15.5	3.8E+3	3.0E+3	1.6E+3	1.4E+4	2.2E+4	1.8E+4	1.6E+4	1.6E+4
B 31	6.0	2670		12.5	3.9E+3	1.6E+3	5.6E+3	1.5E+4	2.6E+4	2.2E+4	2.0E+4	2.0E+4
B 33	6.1	2130		7.4	8.8E+3	2.1E+3	1.6E+3	3.0E+3	1.6E+4	7.0E+3	4.7E+3	4.6E+3
C 44	8.9	4380		14.6	8.8E+4	4.3E+3	5.0E+2	6.4E+2	9.3E+4	1.2E+4	1.8E+3	1.3E+3
C 45	8.3	4360		19.4	1.4E+5	8.2E+3	5.1E+2	5.1E+2	1.4E+5	1.9E+4	2.0E+3	1.2E+3
C 46	9.0	3230		14.4	7.0E+4	9.0E+3	3.0E+2	6.4E+2	8.0E+4	1.4E+4	1.5E+3	1.1E+3
AVERAGE					5.2E+4	4.7E+3	1.7E+3	5.6E+3	6.4E+4	1.5E+4	7.6E+3	7.3E+3
HIGH					1.4E+5	9.0E+3	5.6E+3	1.5E+4	1.4E+5	2.2E+4	2.0E+4	2.0E+4
LOW					3.8E+3	1.6E+3	3.0E+2	5.1E+2	1.6E+4	7.0E+3	1.5E+3	1.1E+3

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL	ASH	SODIUM	*- - - EMISSIONS - µG/DRY SCM* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070		8.3	9.1E+2	3.1E+3	0.0	0.0	4.0E+3	1.7E+3	2.8E+1	6.0E+1
E 16	8.3	2760		5.1	2.5E+2	9.1E+1	4.6E+1	0.0	3.9E+2	1.0E+2	4.8E+1	4.7E+1
E 17	6.2	2770		5.3	2.4E+3	7.3E+2	1.1E+2	0.0	3.3E+3	5.9E+2	1.3E+2	1.2E+2
F 22	6.0	2980		7.7	8.2E+2	8.6E+2	6.0E+2	0.0	2.3E+3	1.1E+3	6.1E+2	6.1E+2
F 30	6.8	2890		9.4	4.6E+2	1.1E+3	1.4E+2	0.0	1.7E+3	7.6E+2	1.5E+2	1.5E+2
G 15	8.7	3230		11.5	1.6E+4	2.9E+3	4.6E+2	0.0	2.0E+4	2.6E+3	5.9E+2	5.3E+2
G 20	9.2	2320		5.3	2.2E+3	2.5E+3	2.4E+2	0.0	5.0E+3	1.7E+3	2.8E+2	2.6E+2
H 11	9.4	1980		3.4	3.3E+3	1.5E+2	1.2E+3	0.0	4.7E+3	1.4E+3	1.2E+3	1.2E+3
I 09	5.9	2700		6.6	6.6E+3	4.7E+3	3.6E+2	0.0	1.2E+4	3.2E+3	4.4E+2	5.3E+2
I 18	7.8	1670		11.9	7.9E+2	1.4E+4	4.0E+2	4.2E+1	1.5E+4	8.1E+3	5.5E+2	6.6E+2
J 15	7.9	1550		9.2	3.3E+2	7.3E+2	2.8E+3	7.0E+3	1.1E+4	1.1E+4	9.7E+3	9.7E+3
J 16	8.9	2570		6.7	3.3E+2	3.5E+3	2.9E+3	0.0	6.7E+3	6.7E+3	2.9E+3	2.9E+3
K 18	9.8	1280		2.4	3.7E+2	0.0	1.7E+3	2.1E+3	4.2E+3	3.9E+3	3.8E+3	3.8E+3
AVERAGES												
SPREADER, NO REINJ FROM D.C.					3.8E+3	1.4E+3	2.7E+2	0.0	5.4E+3	1.1E+3	3.0E+2	2.9E+2
MASS FIRED OVERFEED					1.8E+3	3.7E+3	1.3E+3	1.3E+3	8.2E+3	5.1E+3	2.7E+3	2.7E+3
HIGH					1.6E+4	1.4E+4	2.9E+3	7.0E+3	2.0E+4	1.1E+4	9.7E+3	9.7E+3
LOW					2.5E+2	9.1E+1	4.6E+1	4.2E+1	3.9E+2	1.0E+2	2.8E+1	4.7E+1

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

MAGNESIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J MAGNESIUM	EMISSIONS - µG/DRY SCM: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	14.2	3.8E+3	1.9E+3	1.6E+2	7.0E+3	1.3E+4	8.9E+3	7.2E+3	7.2E+3
B 31	6.0	2670	16.9	9.7E+3	4.0E+3	4.0E+2	7.3E+3	2.1E+4	1.2E+4	7.8E+3	7.7E+3
B 33	6.1	2130	8.7	8.8E+3	3.3E+3	1.6E+2	3.0E+3	1.5E+4	6.4E+3	3.3E+3	3.2E+3
C 44	8.9	4380	95.2	7.3E+5	2.6E+4	5.0E+1	6.4E+2	7.6E+5	8.4E+4	6.8E+3	1.8E+3
C 45	8.3	4360	106.3	6.8E+5	9.0E+3	5.1E+1	2.6E+3	6.9E+5	6.9E+4	7.4E+3	3.6E+3
C 46	9.0	3230	17.6	5.8E+5	8.2E+3	1.0E+2	3.8E+3	6.0E+5	6.2E+4	6.1E+3	4.8E+3
AVERAGE				3.4E+5	8.7E+3	1.5E+2	4.1E+3	3.5E+5	4.0E+4	6.6E+3	4.7E+3
HIGH				7.3E+5	2.6E+4	4.0E+2	7.3E+3	7.6E+5	8.4E+4	8.1E+3	7.7E+3
LOW				3.8E+3	1.9E+3	5.0E+1	6.4E+2	1.3E+4	6.4E+3	3.3E+3	1.8E+3

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J MAGNESIUM	EMISSIONS - µG/DRY SCM: 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	10.7	6.1E+2	1.7E+2	0.0	0.0	7.8E+2	1.1E+2	5.4E+0	1.2E+1
E 16	8.3	2760	14.6	2.5E+2	2.1E+2	4.6E+0	0.0	4.7E+2	1.3E+2	7.9E+0	6.5E+0
E 17	6.2	2770	12.9	2.4E+3	1.7E+2	2.7E+0	0.0	2.6E+3	1.7E+2	2.1E+1	1.3E+1
F 22	6.0	2980	11.5	5.8E+2	2.0E+2	1.7E+1	0.0	7.9E+2	1.5E+2	2.3E+1	2.8E+1
F 30	6.8	2890	12.9	5.7E+2	2.7E+2	4.9E+1	0.0	9.0E+2	2.2E+2	5.5E+1	5.2E+1
G 15	8.7	3230	21.2	1.5E+4	1.2E+3	5.3E+1	0.0	1.6E+4	1.2E+3	1.6E+2	1.2E+2
G 20	9.2	2320	11.8	4.4E+3	1.0E+3	4.9E+1	0.0	5.5E+3	7.5E+2	8.7E+1	7.1E+1
H 11	9.4	1980	7.4	1.1E+3	5.1E+1	4.7E+1	0.0	1.2E+3	1.1E+2	5.5E+1	6.4E+1
I 09	5.9	2730	13.2	2.6E+3	3.8E+2	6.0E+1	0.0	3.1E+3	3.5E+2	8.1E+1	1.0E+2
I 18	7.8	1670	7.6	6.3E+2	1.4E+2	6.7E+1	8.4E+1	9.2E+2	2.5E+2	1.6E+2	1.6E+2
J 15	7.9	1550	7.3	1.3E+2	5.8E+1	5.5E+1	2.8E+2	5.2E+2	5.2E+2	3.4E+2	3.4E+2
J 16	8.9	2570	12.9	6.7E+1	1.4E+2	1.1E+2	0.0	3.2E+2	3.2E+2	1.2E+2	1.2E+2
K 18	9.8	1280	12.1	6.2E+3	0.0	2.8E+2	1.4E+3	7.9E+3	1.9E+3	1.8E+3	1.8E+3
AVERAGES											
SPREADER, NO REINJ FROM D.C.				3.8E+3	5.0E+2	2.9E+1	0.0	4.4E+3	4.3E+2	6.0E+1	4.7E+1
MASS FIRED OVERFEED				1.6E+3	1.3E+2	8.9E+1	2.6E+2	2.1E+3	5.1E+2	3.6E+2	3.7E+2
HIGH				1.5E+4	1.2E+3	2.8E+2	1.4E+3	1.6E+4	1.9E+3	1.8E+3	1.8E+3
LOW				6.7E+1	5.1E+1	2.7E+0	8.4E+1	3.2E+2	1.1E+2	5.4E+0	6.5E+0

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

ALUMINUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J ALUMINUM	*- - - E M I S S I O N S - µG/DRY SCM* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	420.7	1.9E+5	9.8E+3	3.9E+2	1.4E+2	2.0E+5	2.5E+4	2.0E+3	8.4E+2
B 31	6.0	2670	444.1	6.8E+4	2.0E+4	2.4E+2	1.5E+2	8.9E+4	2.1E+4	1.0E+3	5.2E+2
B 33	6.1	2130	338.2	2.7E+5	3.3E+4	1.6E+2	1.5E+2	3.0E+5	4.8E+4	2.4E+3	7.6E+2
C 44	8.9	4380	381.0	4.4E+6	2.5E+4	5.0E+1	1.2E+3	4.4E+6	4.1E+5	3.2E+4	7.9E+3
C 45	8.3	4360	428.8	4.1E+6	2.2E+4	1.0E+2	4.5E+2	4.1E+6	3.7E+5	2.9E+4	6.7E+3
C 46	9.0	3230	370.4	3.5E+6	2.8E+4	4.6E+1	5.1E+3	3.5E+6	3.3E+5	3.0E+4	1.0E+4
AVERAGE				2.1E+6	2.3E+4	1.7E+2	1.2E+3	2.1E+6	2.0E+5	1.6E+4	4.5E+3
HIGH				4.4E+6	3.3E+4	3.9E+2	5.1E+3	4.4E+6	4.1E+5	3.2E+4	1.0E+4
LOW				6.8E+4	9.8E+3	4.6E+1	1.4E+2	8.9E+4	2.1E+4	1.0E+3	5.2E+2

• STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR •

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J ALUMINUM	*- - - E M I S S I O N S - µG/DRY SCM* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	327.7	2.3E+4	4.6E+3	0.0	0.0	2.7E+4	3.3E+3	1.9E+2	4.1E+2
E 16	8.3	2760	529.0	5.1E+4	1.8E+4	4.6E+1	0.0	6.9E+4	1.2E+4	5.3E+2	3.2E+2
E 17	6.2	2770	463.9	4.9E+4	1.5E+4	4.3E+1	0.0	6.4E+4	9.6E+3	4.9E+2	3.0E+2
F 22	6.0	2980	515.3	2.5E+5	8.6E+3	1.7E+2	0.0	2.6E+5	1.3E+4	2.0E+3	1.2E+3
F 30	6.8	2890	499.1	1.7E+5	8.2E+3	1.4E+2	0.0	1.8E+5	1.0E+4	1.4E+3	8.6E+2
G 15	8.7	3230	538.2	5.8E+5	5.1E+4	2.3E+2	0.0	6.3E+5	4.7E+4	4.6E+3	2.7E+3
G 20	3.2	2320	463.8	7.7E+5	4.4E+4	2.4E+2	0.0	8.2E+5	4.9E+4	6.0E+3	3.5E+3
H 11	9.4	1980	244.6	2.2E+4	1.0E+3	2.3E+2	0.0	2.4E+4	1.5E+3	4.8E+2	5.8E+2
I 09	5.9	2700	329.5	9.9E+4	7.6E+3	1.8E+3	0.0	1.1E+5	9.1E+3	2.5E+3	3.4E+3
I 18	7.8	1670	223.5	1.2E+5	1.4E+4	6.7E+2	8.4E-2	1.3E+5	1.2E+4	1.6E+3	2.6E+3
J 15	7.9	1550	216.4	8.3E+3	2.2E+3	1.1E+3	0.0	1.2E+4	1.2E+4	1.2E+3	1.3E+3
J 16	8.9	2570	361.7	4.2E+3	2.1E+3	1.7E+3	0.0	8.0E+3	8.0E+3	1.8E+3	1.8E+3
K 18	9.8	1280	177.2	2.8E+5	0.0	5.7E+2	1.4E+3	2.8E+5	1.1E+4	3.9E+3	6.1E+3
AVERAGES											
SPREADER,NO REINJ FROM D.C.				3.1E+5	2.4E+4	1.5E+2	0.0	3.4E+5	2.3E+4	2.5E+3	1.5E+3
MASS FIRED OVERFEED				7.9E+4	4.5E+3	8.7E+2	2.0E+2	8.4E+4	8.1E+3	1.7E+3	2.3E+3
HIGH				7.7E+5	5.1E+4	1.8E+3	1.4E+3	8.2E+5	4.9E+4	6.0E+3	6.1E+3
LOW				4.2E+3	1.0E+3	4.3E+1	8.4E-2	8.0E+3	1.5E+3	1.9E+2	3.9E+2

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

SILICON

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J SILICON	*- - - E M I S S I O N S - µG/DRY SCM* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	705.8	1.9E+5	1.8E+4	7.9E+2	4.2E+2	2.1E+5	3.1E+4	2.7E+3	1.5E+3
B 31	6.0	2670	657.6	4.9E+5	3.9E+4	8.1E+2	4.4E+2	5.3E+5	7.3E+4	4.9E+3	2.0E+3
B 33	6.1	2130	539.3	2.7E+5	6.5E+4	2.4E+2	6.0E+2	3.3E+5	7.3E+4	3.2E+3	1.3E+3
C 44	8.9	4380	893.9	4.4E+6	2.3E+4	4.5E+2	3.8E+3	4.4E+6	4.1E+5	3.5E+4	1.1E+4
C 45	8.3	4360	889.6	4.1E+6	1.3E+4	1.5E+3	1.3E+3	4.1E+6	3.7E+5	3.1E+4	8.9E+3
C 46	9.0	3230	661.6	3.5E+6	2.4E+4	5.1E+1	5.1E+3	3.5E+6	3.3E+5	3.0E+4	1.0E+4
AVERAGE				2.1E+6	3.8E+4	6.4E+2	1.9E+3	2.2E+6	2.1E+5	1.8E+4	5.9E+3
HIGH				4.4E+6	6.5E+4	1.5E+3	5.1E+3	4.4E+6	4.1E+5	3.5E+4	1.1E+4
LOW				1.9E+5	1.3E+4	5.1E+1	4.2E+2	2.1E+5	3.1E+4	2.7E+3	1.3E+3

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J SILICON	*- - - E M I S S I O N S - µG/DRY SCM* 10.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	13.2	2070	481.3	2.3E+4	4.5E+3	0.0	0.0	2.7E+4	3.2E+3	1.9E+2	4.1E+2
E 16	8.3	2760	641.6	5.1E+4	1.5E+4	4.6E+2	0.0	6.7E+4	1.0E+4	9.2E+2	7.3E+2
E 17	6.2	2770	681.2	7.3E+4	2.4E+4	5.3E+1	0.0	9.8E+4	1.6E+4	7.4E+2	4.4E+2
F 22	6.0	2980	576.9	1.6E+5	5.8E+3	1.0E+3	0.0	1.7E+5	9.5E+3	2.2E+3	1.7E+3
F 30	6.8	2690	647.3	1.1E+5	5.5E+3	2.1E+2	0.0	1.2E+5	6.9E+3	1.1E+3	6.9E+2
G 15	8.7	3230	796.8	5.8E+5	5.1E+4	2.3E+2	0.0	6.3E+5	4.7E+4	4.6E+3	2.7E+3
G 20	9.2	2320	538.5	5.5E+5	4.4E+4	2.4E+2	0.0	6.0E+5	4.2E+4	4.4E+3	2.6E+3
H 11	3.4	1980	368.2	1.1E+4	1.0E+3	5.3E+2	0.0	1.3E+4	1.4E+3	6.1E+2	7.1E+2
I 09	5.9	2700	491.8	4.0E+4	2.4E+4	3.6E+3	0.0	6.7E+4	1.8E+4	4.8E+3	4.5E+3
I 18	7.8	1670	332.9	4.7E+4	5.6E+3	2.0E+3	3.4E+0	5.5E+4	6.6E+3	2.4E+3	2.8E+3
J 15	7.9	1550	318.5	8.3E+3	2.9E+3	2.8E+3	0.0	1.4E+4	1.4E+4	2.8E+3	2.9E+3
J 16	3.9	2570	510.3	4.2E+3	2.8E+3	2.9E+3	0.0	9.9E+3	9.9E+3	2.9E+3	3.0E+3
K 18	3.8	1280	228.7	9.2E+4	0.0	4.5E+2	1.4E+3	9.4E+4	4.8E+3	2.5E+3	3.3E+3
AVERAGES											
SPREADER,NO REINJ FROM D.C.				2.6E+5	2.4E+4	3.7E+2	0.0	2.8E+5	2.2E+4	2.3E+3	1.9E+3
MASS FIRED OVERFEED				3.2E+4	5.8E+3	1.7E+3	2.0E+2	4.0E+4	8.2E+3	2.2E+3	2.5E+3
HIGH				5.8E+5	5.1E+4	3.6E+3	1.4E+3	6.3E+5	4.7E+4	4.6E+3	4.5E+3
LOW				4.2E+3	1.8E+3	5.3E+1	3.4E+0	9.9E+3	1.4E+3	1.9E+2	4.1E+2

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

PHOSPHORUS

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J PHOSPHORUS	*- - - E M I S S I O N S - µG/DRY SCM* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	4.5	9.6E+2	1.4E+3	4.7E+0	1.4E+3	3.8E+3	2.5E+3	1.4E+3	1.4E+3
B 31	6.0	2670	5.1	2.9E+3	1.3E+3	4.8E+0	1.5E+3	5.7E+3	2.7E+3	1.5E+3	1.5E+3
B 33	6.1	2130	5.8	2.7E+3	1.9E+3	4.7E+0	6.0E+2	5.1E+3	2.2E+3	6.4E+2	6.1E+2
C 44	8.9	4380	4.0	2.9E+4	6.4E+2	5.0E+0	5.8E+3	3.6E+4	8.9E+3	6.1E+3	5.9E+3
C 45	8.3	4360	3.4	1.4E+4	4.3E+2	1.0E+2	1.9E+4	3.3E+4	2.0E+4	1.9E+4	1.9E+4
C 46	9.0	3230	3.0	1.2E+4	1.2E+3	3.0E+1	5.9E+3	1.9E+4	7.9E+3	6.0E+3	5.9E+3
AVERAGE				1.0E+4	1.1E+3	2.5E+1	5.7E+3	1.7E+4	7.4E+3	5.8E+3	5.7E+3
HIGH				2.9E+4	1.9E+3	1.0E+2	1.9E+4	3.6E+4	2.0E+4	1.9E+4	1.9E+4
LOW				9.6E+2	4.3E+2	4.7E+0	6.0E+2	3.8E+3	2.2E+3	6.4E+2	6.1E+2

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J PHOSPHORUS	*- - - E M I S S I O N S - µG/DRY SCM* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	3.2	9.1E+2	1.2E+3	0.0	0.0	2.2E+3	7.2E+2	1.5E+1	3.2E+1
E 16	8.3	2760	5.2	2.5E+2	2.7E+2	4.6E+0	0.0	5.3E+2	1.6E+2	8.3E+0	6.7E+0
E 17	6.2	2770	2.2	2.2E+3	4.9E+2	5.3E-1	0.0	2.7E+3	3.4E+2	1.9E+1	1.1E+1
F 22	6.0	2980	10.7	2.5E+3	2.6E+2	1.7E+1	0.0	2.7E+3	2.4E+2	3.6E+1	2.8E+1
F 30	6.8	2890	5.7	1.7E+3	2.5E+2	3.5E+0	0.0	2.0E+3	1.9E+2	1.7E+1	1.1E+1
G 15	8.7	3230	2.0	3.3E+2	1.4E+2	6.8E+0	0.0	4.8E+2	9.7E+1	1.0E+1	8.7E+0
G 20	9.2	2320	1.5	1.5E+2	6.3E+2	1.6E+1	0.0	8.0E+2	3.7E+2	2.2E+1	1.9E+1
H 11	9.4	1980	5.7	1.1E+3	2.1E+2	1.8E+1	0.0	1.3E+3	1.7E+2	2.7E+1	3.7E+1
I 09	5.9	2700	4.0	1.3E+3	1.9E+3	1.2E+2	0.0	3.3E+3	1.2E+3	1.4E+2	1.7E+2
I 18	7.8	1670	1.9	3.9E+2	8.3E+2	2.0E+1	8.4E-2	1.2E+3	4.9E+2	2.9E+1	3.9E+1
J 15	7.9	1550	2.1	6.6E+1	2.2E+3	5.5E+1	7.0E-7	2.3E+3	2.3E+3	7.1E+1	8.9E+1
J 16	8.9	2570	4.5	8.3E+0	5.7E+2	2.3E+1	0.0	6.0E+2	6.0E+2	2.7E+1	3.2E+1
K 18	9.8	1280	0.6	2.5E+2	0.0	1.1E+2	3.6E+1	4.0E+2	1.6E+2	1.5E+2	1.5E+2
AVERAGES											
SPREADER,NO REINJ FROM D.C.				1.2E+3	3.4E+2	8.1E+0	0.0	1.5E+3	2.3E+2	1.9E+1	1.4E+1
MASS FIRED OVERFEED				5.8E+2	9.9E+2	5.0E+1	5.1E+0	1.6E+3	5.0E+2	6.6E+1	7.8E+1
HIGH				2.5E+3	2.2E+3	1.2E+2	3.6E+1	3.3E+3	2.3E+3	1.5E+2	1.7E+2
LOW				8.3E+0	1.4E+2	5.3E-1	7.0E-7	4.0E+2	9.7E+1	8.3E+0	6.7E+0

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

SULFUR

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J SULFUR	*- - - E M I S S I O N S - µG/DRY SCM* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	282.7	3.8E+3	9.4E+3	2.4E+4	2.8E+3	4.0E+4	3.4E+4	2.7E+4	2.7E+4
B 31	6.0	2670	303.8	3.9E+3	5.4E+3	2.4E+4	2.9E+3	3.6E+4	3.1E+4	2.7E+4	2.7E+4
B 33	6.1	2130	248.7	8.8E+3	5.1E+3	2.4E+4	3.0E+3	4.1E+4	3.1E+4	2.7E+4	2.7E+4
C 44	8.9	4380	274.3	4.4E+4	9.2E+3	7.6E+3	5.1E+3	6.6E+4	2.3E+4	1.3E+4	1.3E+4
C 45	8.3	4360	274.3	4.1E+4	7.4E+3	7.6E+3	0.0	5.6E+4	1.7E+4	8.0E+3	7.7E+3
C 46	9.0	3230	860.5	4.7E+4	7.3E+3	2.3E+4	5.1E+3	8.2E+4	3.8E+4	2.8E+4	2.8E+4
AVERAGE				2.5E+4	7.3E+3	1.8E+4	3.2E+3	5.3E+4	2.9E+4	2.2E+4	2.1E+4
HIGH				4.7E+4	9.4E+3	2.4E+4	5.1E+3	8.2E+4	3.8E+4	2.8E+4	2.8E+4
LOW				3.8E+3	5.1E+3	7.6E+3	2.8E+3	3.6E+4	1.7E+4	8.0E+3	7.7E+3

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SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J SULFUR	*- - - E M I S S I O N S - µG/DRY SCM* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	351.3	4.6E+2	8.8E+3	0.0	0.0	9.3E+3	4.9E+3	5.5E+1	1.4E+2
E 16	8.3	2760	254.6	7.6E+2	9.1E+1	4.6E+2	0.0	1.3E+3	5.4E+2	4.7E+2	4.6E+2
E 17	6.2	2770	281.1	2.2E+3	4.9E+2	2.7E+2	0.0	3.0E+3	6.0E+2	2.9E+2	2.8E+2
F 22	6.0	2980	476.0	7.4E+3	8.6E+1	1.3E+4	0.0	2.0E+4	1.3E+4	1.3E+4	1.3E+4
F 30	6.8	2890	313.5	3.4E+3	8.2E+1	7.0E+2	0.0	4.2E+3	8.5E+2	7.2E+2	7.1E+2
G 15	8.7	3230	230.9	3.3E+3	4.3E+2	4.9E+5	0.0	5.0E+5	4.9E+5	4.9E+5	4.9E+5
G 20	9.2	2320	230.5	2.0E+2	6.3E+3	4.9E+5	0.0	5.0E+5	4.9E+5	4.9E+5	4.9E+5
H 11	9.4	1980	581.8	2.2E+4	3.1E+1	4.7E+3	0.0	2.7E+4	5.4E+3	4.8E+3	5.0E+3
I 09	5.9	2700	606.9	2.0E+3	2.8E+3	4.1E+6	0.0	4.1E+6	4.1E+6	4.1E+6	4.1E+6
I 18	7.8	1670	408.3	1.6E+3	5.6E+3	4.3E+5	1.8E+1	4.4E+5	4.4E+5	4.3E+5	4.3E+5
J 15	7.9	1550	317.1	6.6E+2	2.2E+3	3.0E+5	1.4E+3	3.1E+5	3.1E+5	3.1E+5	3.1E+5
J 16	8.9	2570	668.0	3.3E+1	1.4E+3	5.2E+5	1.4E+3	5.2E+5	5.2E+5	5.2E+5	5.2E+5
K 18	9.8	1280	453.5	1.2E+3	0.0	8.5E+4	2.9E+4	1.1E+5	1.1E+5	1.1E+5	1.1E+5
AVERAGES											
SPREADER, NO REINJ FROM D.C.				2.9E+3	1.2E+3	1.7E+5	0.0	1.7E+5	1.7E+5	1.7E+5	1.7E+5
MASS FIRED OVERFEED				4.0E+3	3.0E+3	7.7E+5	4.5E+3	7.9E+5	7.8E+5	7.8E+5	7.8E+5
HIGH				2.2E+4	8.8E+3	4.1E+6	2.9E+4	4.1E+6	4.1E+6	4.1E+6	4.1E+6
LOW				3.3E+1	3.1E+1	2.7E+2	1.8E+1	1.3E+3	5.4E+2	6.5E+1	1.4E+2

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

CHLORINE

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J CHLORINE	EMISSIONS - µG/DRY SCM: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	35.7	6.7E+1	3.6E+0	2.4E+1	5.6E+2	6.5E+2	5.9E+2	5.8E+2	5.8E+2
B 31	6.0	2670	22.9	3.9E+1	3.9E+0	4.0E+1	5.8E+2	6.7E+2	6.3E+2	6.2E+2	6.2E+2
B 33	6.1	2130	47.2	1.8E+2	3.4E+0	6.3E+1	6.0E+2	8.5E+2	6.8E+2	6.7E+2	6.7E+2
C 44	8.9	4380	5.1	1.5E+2	1.5E+1	2.0E+0	0.0	1.6E+2	2.6E+1	3.1E+0	2.3E+0
C 45	8.3	4360	5.1	5.4E+2	6.3E+0	2.0E+0	0.0	5.5E+2	5.4E+1	5.9E+0	2.9E+0
C 46	9.0	3230	23.4	4.7E+2	9.7E+0	1.5E+0	0.0	4.8E+2	5.0E+1	4.9E+0	2.2E+0
AVERAGE				2.4E+2	6.9E+0	2.2E+1	2.9E+2	5.6E+2	3.4E+2	3.1E+2	3.1E+2
HIGH				5.4E+2	1.5E+1	6.3E+1	6.0E+2	8.5E+2	6.8E+2	6.7E+2	6.7E+2
LOW				3.9E+1	3.4E+0	1.5E+0	5.6E+2	1.6E+2	2.6E+1	3.1E+0	2.2E+0

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J CHLORINE	EMISSIONS - µG/DRY SCM: 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	19.2	1.5E+0	5.3E+1	0.0	0.0	5.4E+1	2.9E+1	3.8E-1	8.1E-1
E 16	8.3	2760	24.1	1.8E+0	2.1E-1	9.2E+2	0.0	9.2E+2	9.2E+2	9.2E+2	9.2E+2
E 17	6.2	2770	27.4	1.7E+0	1.7E-1	2.7E-1	0.0	2.1E+0	4.2E-1	2.8E-1	2.7E-1
F 22	6.0	2980	47.3	6.6E+0	2.3E-1	1.7E+1	0.0	2.4E+1	1.8E+1	1.7E+1	1.7E+1
F 30	6.8	2890	53.8	4.6E+0	5.5E-1	2.1E+2	0.0	2.1E+2	2.1E+2	2.1E+2	2.1E+2
G 15	8.7	3230	23.8	9.9E+0	5.8E+0	3.0E+0	0.0	1.9E+1	6.5E+0	3.2E+0	3.1E+0
G 20	9.2	2320	16.7	1.3E+1	2.5E+0	8.3E+0	0.0	2.4E+1	1.0E+1	8.4E+0	8.4E+0
H 11	9.4	1980	18.0	2.2E+0	4.1E-2	2.3E+1	0.0	2.6E+1	2.3E+1	2.3E+1	2.3E+1
I 09	5.9	2700	129.1	6.6E+0	3.8E+0	6.0E-4	0.0	1.0E+1	2.3E+0	7.3E-2	1.6E-1
I 18	7.8	1670	39.9	7.9E-3	1.4E+1	2.0E+1	8.4E-2	3.4E+1	2.8E+1	2.0E+1	2.0E+1
J 15	7.9	1550	40.0	3.3E-1	7.3E-1	1.1E+1	0.0	1.2E+1	1.2E+1	1.1E+1	1.1E+1
J 16	8.9	2570	62.8	1.7E-1	4.2E-1	2.3E+1	0.0	2.4E+1	2.4E+1	2.3E+1	2.3E+1
K 18	9.8	1280	22.8	1.2E+1	0.0	4.0E+1	2.1E+2	2.7E+2	2.5E+2	2.5E+2	2.5E+2
AVERAGES											
SPREADER,NO REINJ FROM D.C.				6.3E+0	1.6E+0	1.9E+2	0.0	2.0E+2	1.9E+2	1.9E+2	1.9E+2
MASS FIRED OVERFEED				3.3E+0	1.0E+1	1.7E+1	3.1E+1	6.1E+1	5.3E+1	4.7E+1	4.8E+1
HIGH				1.3E+1	5.3E+1	9.2E+2	2.1E+2	9.2E+2	9.2E+2	9.2E+2	9.2E+2
LOW				7.9E-3	4.1E-2	6.0E-4	8.4E-2	2.1E+0	4.2E-1	7.3E-2	1.6E-1

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

POTASSIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL	INPUT NG/J ASH POTASSIUM	EMISSIONS - µG/DRY SCM* 10 µM + 3 µM CYCLONE	1 UM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP - MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	48.4	2.9E+3	1.3E+3	4.7E+1	7.0E+2	4.9E+3	2.0E+3	7.8E+2	7.5E+2
B 31	6.0	2670	51.0	9.7E+3	9.2E+2	4.8E+1	2.9E+3	1.4E+4	4.5E+3	3.0E+3	3.0E+3
B 33	6.1	2130	21.8	4.4E+3	1.0E+3	7.9E+1	3.0E+3	8.6E+3	4.3E+3	3.1E+3	3.1E+3
C 44	8.9	4380	20.0	4.4E+4	1.9E+3	1.5E+1	0.0	4.6E+4	5.3E+3	3.3E+2	8.4E+1
C 45	8.3	4360	21.7	6.8E+4	1.3E+3	2.5E+1	0.0	6.9E+4	6.9E+3	5.1E+2	1.3E+2
C 46	9.0	3230	44.3	1.2E+4	2.1E+3	5.1E+1	0.0	1.4E+4	2.7E+3	1.5E+2	7.1E+1
AVERAGE				2.3E+4	1.4E+3	4.4E+1	1.1E+3	2.6E+4	4.3E+3	1.3E+3	1.2E+3
HIGH				6.8E+4	2.1E+3	7.9E+1	3.0E+3	6.9E+4	6.9E+3	3.1E+3	3.1E+3
LOW				2.9E+3	9.2E+2	1.5E+1	7.0E+2	4.9E+3	2.0E+3	1.5E+2	7.1E+1

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL	INPUT NG/J ASH POTASSIUM	EMISSIONS - µG/DRY SCM* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP - MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	27.6	9.1E+3	7.6E+3	0.0	0.0	1.7E+4	4.5E+3	1.2E+2	2.5E+2
E 16	8.3	2760	47.4	5.1E+3	3.0E+2	4.1E-1	0.0	5.4E+3	3.3E+2	3.8E+1	2.2E+1
E 17	6.2	2770	43.2	9.8E+3	2.4E+3	2.7E-1	0.0	1.2E+4	1.7E+3	8.6E+1	4.9E+1
F 22	6.0	2980	39.3	3.3E+3	5.8E+3	1.7E+1	0.0	9.1E+3	3.3E+3	8.0E+1	5.3E+1
F 30	6.8	2890	51.5	2.3E+4	1.1E+3	4.2E+0	0.0	2.4E+4	1.3E+3	1.7E+2	1.0E+2
G 15	8.7	3230	66.2	1.6E+4	7.2E+3	4.6E+1	0.0	2.4E+4	4.6E+3	2.1E+2	1.4E+2
G 20	9.2	2320	29.5	4.4E+4	6.3E+3	8.3E+1	0.0	5.1E+4	5.0E+3	4.4E+2	2.9E+2
H 11	9.4	1980	28.6	1.1E+4	1.0E+3	1.8E+1	0.0	1.2E+4	9.4E+2	1.0E+2	2.0E+2
I 09	5.9	2700	43.3	2.0E+4	1.4E+4	1.8E+3	0.0	3.6E+4	1.0E+4	2.0E+3	2.3E+3
I 18	7.8	1670	20.6	7.9E+3	8.3E+3	6.7E+1	8.4E-2	1.6E+4	4.9E+3	1.8E+2	3.1E+2
J 15	7.9	1550	22.8	5.0E+3	1.5E+4	1.7E+1	2.1E+2	2.0E+4	2.0E+4	3.6E+2	5.2E+2
J 16	8.9	2570	40.7	2.5E+3	1.4E+4	5.2E+1	0.0	1.7E+4	1.7E+4	1.7E+2	3.0E+2
K 18	9.8	1280	18.5	1.8E+3	0.0	1.1E+2	5.7E+1	2.0E+3	2.3E+2	1.8E+2	2.0E+2
AVERAGES				1.7E+4	3.9E+3	2.5E+1	0.0	2.1E+4	2.7E+3	1.7E+2	1.1E+2
SPREADER, NO REINJ FROM D.C.				8.2E+3	8.5E+3	2.9E+2	3.8E+1	1.7E+4	8.2E+3	4.5E+2	5.8E+2
MASS FIRED OVERFEED				4.4E+4	1.5E+4	1.8E+3	2.1E+2	5.1E+4	2.0E+4	2.0E+3	2.3E+3
HIGH				1.8E+3	3.0E+2	2.7E-1	8.4E-2	2.0E+3	2.3E+2	3.8E+1	2.2E+1
LOW											

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

CALCIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL	INPUT NG/J ASH	INPUT NG/J CALCIUM	EMISSIONS - µG/DRY SCM* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710		27.1	2.9E+3	1.3E+3	5.5E+2	5.6E+3	1.0E+4	7.4E+3	6.2E+3	6.2E+3
B 31	6.0	2670		36.3	9.7E+3	1.6E+3	8.1E+2	1.5E+3	1.4E+4	4.3E+3	2.3E+3	2.3E+3
B 33	6.1	2130		30.5	8.8E+3	2.8E+3	7.9E+2	1.5E+3	1.4E+4	5.2E+3	2.4E+3	2.3E+3
C 44	8.9	4380		501.3	2.2E+6	2.9E+4	3.0E+2	1.3E+3	2.2E+6	2.2E+5	1.7E+4	4.9E+3
C 45	8.3	4360		399.2	2.0E+6	2.2E+4	3.6E+2	5.1E+3	2.1E+6	2.0E+5	2.0E+4	8.6E+3
C 46	9.0	3230		56.6	2.3E+5	1.0E+4	3.0E+2	1.3E+3	2.5E+5	3.0E+4	3.3E+3	2.0E+3
AVERAGE					7.5E+5	1.1E+4	5.2E+2	2.7E+3	7.6E+5	7.7E+4	8.5E+3	4.4E+3
HIGH					2.2E+6	2.9E+4	8.1E+2	5.6E+3	2.2E+6	2.2E+5	2.0E+4	8.6E+3
LOW					2.9E+3	1.3E+3	3.0E+2	1.3E+3	1.0E+4	4.3E+3	2.3E+3	2.0E+3

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL	INPUT NG/J ASH	INPUT NG/J CALCIUM	EMISSIONS - µG/DRY SCM* 10.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070		27.8	1.8E+3	6.2E+3	0.0	0.0	8.0E+3	3.4E+3	5.6E+1	1.2E+2
E 16	8.3	2760		40.8	5.1E+3	1.5E+3	1.4E+2	0.0	6.8E+3	1.1E+3	1.8E+2	1.6E+2
E 17	6.2	2770		32.4	2.4E+3	2.2E+3	3.7E+1	0.0	4.7E+3	1.3E+3	7.0E+1	5.6E+1
F 22	6.0	2980		53.6	7.4E+3	5.8E+2	3.4E+2	0.0	8.3E+3	9.0E+2	4.0E+2	3.8E+2
F 30	6.8	2890		29.9	1.1E+4	5.5E+2	7.0E+1	0.0	1.2E+4	7.4E+2	1.5E+2	1.2E+2
G 15	8.7	3230		27.4	4.9E+3	7.2E+3	4.6E+1	0.0	1.2E+4	4.2E+3	1.3E+2	9.4E+1
G 20	9.2	2320		21.9	6.6E+3	6.3E+2	8.2E+2	0.0	8.1E+3	1.4E+3	8.7E+2	8.5E+2
H 11	9.4	1980		27.1	2.2E+3	2.6E+2	4.7E+2	0.0	3.0E+3	6.8E+2	4.8E+2	5.0E+2
I 39	5.9	2700		46.2	6.6E+3	9.4E+2	8.9E+3	0.0	1.6E+4	9.7E+3	9.0E+3	9.0E+3
I 18	7.8	1670		35.8	7.9E+3	4.2E+2	3.3E+3	8.4E+2	1.2E+4	4.7E+3	4.2E+3	4.3E+3
J 15	7.9	1550		25.2	1.0E+3	2.2E+2	4.4E+2	0.0	1.7E+3	1.7E+3	4.5E+2	4.6E+2
J 16	8.9	2570		38.8	1.0E+3	2.1E+2	5.7E+2	7.2E+2	2.5E+3	2.5E+3	1.3E+3	1.3E+3
K 18	9.8	1280		51.0	3.7E+3	0.0	5.1E+2	2.9E+2	4.5E+3	9.1E+2	8.2E+2	8.5E+2
AVERAGES												
SPREADER,NO REINJ FROM D.C.					6.3E+3	2.1E+3	2.4E+2	0.0	8.7E+3	1.6E+3	3.0E+2	2.8E+2
MASS FIRED OVERFEED					3.5E+3	1.2E+3	2.0E+3	2.6E+2	6.9E+3	3.4E+3	2.3E+3	2.4E+3
HIGH					1.1E+4	7.2E+3	8.9E+3	8.4E+2	1.6E+4	9.7E+3	9.0E+3	9.0E+3
LOW					1.8E+3	2.1E+2	3.7E+1	2.9E+2	1.7E+3	6.8E+2	5.6E+1	5.6E+1

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

SCANDIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	1.9E+2	6.2E+1	3.1E-1	1.4E+0	2.6E+2	6.5E+1	3.5E+0	2.1E+0
B 31	6.0	2670	1.9E+2	5.5E+1	3.3E-1	1.5E+0	2.5E+2	6.0E+1	3.5E+0	2.2E+0
B 33	6.1	2130	1.8E+2	8.9E+1	3.2E-1	1.5E+0	2.7E+2	8.4E+1	3.7E+0	2.2E+0
C 44	8.9	4380	2.9E+2	4.2E+0	1.0E-1	6.4E-1	3.0E+2	3.0E+1	2.8E+0	1.2E+0
C 45	8.3	4360	5.4E+2	3.6E+0	1.0E-1	6.4E-1	5.5E+2	5.1E+1	4.6E+0	1.6E+0
C 46	9.0	3230	2.3E+2	1.5E+1	5.1E-2	6.4E-1	2.5E+2	3.3E+1	2.4E+0	1.1E+0
AVERAGE			2.7E+2	3.8E+1	2.0E-1	1.0E+0	3.1E+2	5.4E+1	3.4E+0	1.7E+0
HIGH			5.4E+2	8.9E+1	3.3E-1	1.5E+0	5.5E+2	8.4E+1	4.6E+0	2.2E+0
LOW			1.8E+2	3.6E+0	5.1E-2	6.4E-1	2.5E+2	3.0E+1	2.4E+0	1.1E+0

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	1.1E+1	3.8E+0	0.0	0.0	1.4E+1	2.4E+0	1.0E-1	2.2E-1
E 16	8.3	2760	5.1E+1	1.8E+1	2.3E-1	0.0	6.9E+1	1.2E+1	7.1E-1	5.1E-1
E 17	6.2	2770	2.4E+1	4.9E+1	1.6E-1	0.0	7.3E+1	2.8E+1	6.7E-1	4.5E-1
F 22	6.0	2980	1.6E+2	5.8E+0	6.9E-1	0.0	1.7E+2	9.1E+0	1.9E+0	1.4E+0
F 30	6.8	2890	1.1E+2	5.5E+0	7.0E-1	0.0	1.2E+2	7.4E+0	1.5E+0	1.2E+0
G 15	8.7	3230	3.3E+1	5.8E+0	7.6E-1	0.0	3.9E+1	5.0E+0	1.0E+0	9.2E-1
G 20	9.2	2320	8.8E+1	2.5E+0	1.7E+0	0.0	9.2E+1	5.9E+0	2.3E+0	2.0E+0
H 11	9.4	1980	2.2E+1	2.1E+0	1.2E+0	0.0	2.5E+1	3.0E+0	1.3E+0	1.5E+0
I 09	5.9	2700	4.0E+1	3.8E+0	3.6E+1	0.0	7.9E+1	3.9E+1	3.6E+1	3.6E+1
I 18	7.8	1670	4.7E+1	1.4E+0	6.[illegible]E+0	5.1E+0	6.0E+1	1.4E+1	1.2E+1	1.2E+1
J 15	7.9	1550	6.6E+0	2.9E+0	5.5E+0	4.2E+0	1.9E+1	1.9E+1	9.8E+0	9.8E+0
J 16	8.9	2570	3.3E+0	7.1E+0	1.1E+1	7.2E+0	2.9E+1	2.9E+1	1.9E+1	1.9E+1
K 18	9.8	1280	2.5E+1	0.0	5.7E+0	2.9E+1	5.9E+1	3.5E+1	3.4E+1	3.5E+1
AVERAGES										
SPREADER,NO REINJ FROM D.C.			7.9E+1	1.4E+1	7.0E-1	0.0	9.4E+1	1.1E+1	1.4E+0	1.1E+0
MASS FIRED OVERFEED			2.2E+1	3.0E+0	9.5E+0	6.4E+0	4.1E+1	2.0E+1	1.6E+1	1.6E+1
HIGH			1.6E+2	4.9E+1	3.6E+1	2.9E+1	1.7E+2	3.9E+1	3.6E+1	3.6E+1
LOW			3.3E+0	1.4E+0	1.6E-1	4.2E+0	1.4E+1	2.4E+0	1.0E-1	2.2E-1

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

TITANIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J TITANIUM	EMISSIONS - µG/DRY SCM* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP - MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210	13.5					6.8E+2			
A 35	6.0	3140	13.2					1.0E+0			
B 30	6.0	2710	28.6	1.9E+4	5.9E+3	1.6E+1	1.4E+1	2.5E+4	6.1E+3	2.1E+2	6.7E+1
B 31	6.0	2670	24.7	2.9E+4	2.3E+3	2.4E+1	1.5E+1	3.2E+4	4.3E+3	2.6E+2	8.6E+1
B 33	6.1	2130	21.1	2.7E+4	4.0E+3	4.7E+1	1.5E+1	3.1E+4	5.4E+3	2.8E+2	1.1E+2
C 44	8.9	4380	23.1	1.0E+5	4.0E+3	2.5E+1	2.5E+1	1.1E+5	1.2E+4	7.9E+2	2.1E+2
C 45	8.3	4360	25.9	9.5E+4	3.6E+3	1.5E+1	1.2E+2	9.9E+4	1.1E+4	8.2E+2	2.8E+2
C 46	9.0	3230	20.0	8.2E+4	2.8E+3	1.5E+1	3.8E+1	8.5E+4	9.4E+3	6.5E+2	1.8E+2
AVERAGE				4.4E+4	2.8E+3	1.8E+1	2.8E+1	4.7E+4	6.1E+3	4.6E+2	2.0E+2
HIGH				1.0E+5	5.9E+3	4.7E+1	1.2E+2	1.1E+5	1.2E+4	8.2E+2	6.8E+2
LOW				1.9E+4	2.3E+3	1.5E+1	1.4E+1	1.0E+0	1.0E+0	1.0E+0	1.0E+0

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J TITANIUM	EMISSIONS - µG/DRY SCM* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP - MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	13.2	2070	19.2	9.1E+3	1.9E+3	0.0	0.0	1.1E+4	1.3E+3	7.7E+1	1.7E+2
E 16	8.3	2760	26.9	2.5E+4	6.1E+3	9.2E+0	0.0	3.2E+4	4.2E+3	2.3E+2	1.4E+2
E 17	6.2	2770	61.5	9.8E+3	2.4E+3	1.6E+0	0.0	1.2E+4	1.7E+3	8.7E+1	5.0E+1
F 22	6.0	2980	21.9	2.5E+4	8.6E+2	3.4E+1	0.0	2.6E+4	1.3E+3	2.1E+2	1.4E+2
F 30	6.8	2890	25.3	5.2E+4	8.2E+2	7.0E+0	0.0	5.2E+4	2.1E+3	3.7E+2	2.2E+2
G 15	8.7	3230	30.6	3.3E+4	7.2E+3	1.5E+1	0.0	4.0E+4	5.1E+3	3.0E+2	1.8E+2
G 20	9.2	2320	26.2	6.6E+4	3.8E+3	8.2E+1	0.0	7.0E+4	4.3E+3	5.7E+2	3.6E+2
H 11	9.4	1980	13.3	1.0E+4	4.6E+2	4.7E+1	0.0	1.1E+4	6.2E+2	1.2E+2	2.0E+2
I 09	5.9	2700	19.8	2.0E+3	1.9E+3	1.8E+3	0.0	5.7E+3	2.9E+3	1.8E+3	1.8E+3
I 18	7.8	1670	15.9	2.4E+4	1.1E+3	2.0E+2	1.7E-1	2.5E+4	1.6E+3	3.7E+2	5.7E+2
J 15	7.9	1550	14.0	3.3E+3	1.5E+3	1.7E+2	0.0	4.9E+3	4.9E+3	2.0E+2	2.4E+2
J 16	8.9	2570	19.9	1.7E+3	7.1E+2	2.9E+2	0.0	2.7E+3	2.7E+3	3.0E+2	3.2E+2
K 18	9.8	1280	8.7	2.5E+3	0.0	1.1E+2	7.1E+1	2.6E+3	2.6E+2	2.0E+2	2.2E+2
AVERAGES				3.5E+4	3.5E+3	2.5E+1	0.0	3.9E+4	3.1E+3	3.0E+2	1.8E+2
SPREADER, NO REINJ FROM D.C.				7.4E+3	1.1E+3	3.7E+2	1.0E+1	8.9E+3	2.0E+3	4.4E+2	5.1E+2
MASS FIRED OVERFEED				6.6E+4	7.2E+3	1.8E+3	7.1E+1	7.0E+4	5.1E+3	1.8E+3	1.8E+3
HIGH				1.7E+3	4.6E+2	1.6E+0	1.7E-1	2.6E+3	2.6E+2	7.7E+1	5.0E+1
LOW											

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

VANADIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210					1.3E+1			
A 35	6.0	3140					7.6E+0			
B 30	6.0	2710	2.9E+2	2.2E+2	1.6E+1	1.4E+0	5.3E+2	2.1E+2	2.1E+1	1.8E+1
B 31	6.0	2670	1.9E+3	2.4E+2	2.4E+1	1.5E+0	2.2E+3	3.8E+2	4.1E+1	2.9E+1
B 33	6.1	2130	3.5E+2	2.2E+2	3.1E+1	1.5E+0	6.0E+2	2.3E+2	3.7E+1	3.4E+1
C 44	8.9	4380	2.9E+3	6.4E+1	4.0E+0	0.0	3.0E+3	3.1E+2	2.5E+1	8.5E+0
C 45	8.3	4360	2.7E+3	8.3E+1	1.0E+0	0.0	2.8E+3	3.0E+2	2.1E+1	5.2E+0
C 46	9.0	3230	2.3E+3	1.1E+2	1.5E+1	0.0	2.5E+3	3.1E+2	3.2E+1	1.9E+1
AVERAGE			1.3E+3	1.2E+2	1.1E+1	5.5E-1	1.5E+3	2.2E+2	2.5E+1	1.7E+1
HIGH			2.9E+3	2.4E+2	3.1E+1	1.5E+0	3.0E+3	3.8E+2	4.1E+1	3.4E+1
LOW			2.9E+2	6.4E+1	1.0E+0	1.4E+0	7.6E+0	7.6E+0	7.6E+0	5.2E+0

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	13.2	2070	1.5E+2	2.0E+2	0.0	0.0	3.6E+2	1.2E+2	2.9E+0	5.3E+0
E 16	8.3	2760	7.6E+2	1.8E+2	4.6E+0	0.0	9.5E+2	1.3E+2	1.1E+1	6.4E+0
E 17	6.2	2770	2.4E+2	1.5E+2	4.3E-1	0.0	3.9E+2	8.8E+1	3.2E+0	2.0E+0
F 22	6.0	2980	8.2E+2	8.6E+1	1.7E+1	0.0	9.3E+2	9.1E+1	2.4E+1	2.1E+1
F 30	6.8	2890	1.7E+3	8.2E+1	4.9E+0	0.0	1.8E+3	1.1E+2	1.8E+1	1.2E+1
G 15	8.7	3230	4.9E+2	1.2E+2	7.6E+0	0.0	6.2E+2	8.7E+1	1.2E+1	1.0E+1
G 20	9.2	2320	1.1E+3	1.0E+2	2.4E+1	0.0	1.2E+3	1.2E+2	3.3E+1	2.9E+1
H 11	9.4	1980	6.7E+2	5.1E+1	5.3E+0	0.0	7.2E+2	5.5E+1	1.0E+1	1.6E+1
I 09	5.9	2700	5.3E+2	2.8E+2	1.8E+2	0.0	9.9E+2	3.5E+2	1.8E+2	1.9E+2
I 18	7.8	1670	2.4E+2	5.6E+1	6.7E+1	8.4E-2	3.6E+2	1.0E+2	6.9E+1	7.1E+1
J 15	7.9	1550	6.6E+1	1.5E+2	5.5E+1	5.6E+0	2.7E+2	2.7E+2	6.2E+1	6.4E+1
J 16	8.9	2570	3.3E+1	1.4E+2	2.9E+1	0.0	2.0E+2	2.0E+2	3.0E+1	3.1E+1
K 18	9.8	1280	6.2E+1	0.0	1.7E+0	2.1E+0	6.5E+1	5.8E+0	4.3E+0	4.8E+0
AVERAGES										
SPREADER, NO REINJ FROM D.C.			8.6E+2	1.2E+2	9.9E+0	0.0	9.9E+2	1.0E+2	1.7E+1	1.4E+1
MASS FIRED OVERFEED			2.5E+2	1.3E+2	4.8E+1	1.1E+0	4.2E+2	1.6E+2	5.2E+1	5.5E+1
HIGH			1.7E+3	2.8E+2	1.8E+2	5.6E+0	1.8E+3	3.5E+2	1.8E+2	1.9E+2
LOW			3.3E+1	5.1E+1	4.3E-1	8.4E-2	6.5E+1	5.8E+0	2.5E+0	2.0E+0

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

CHROMIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS - µG/DRY SCM: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210					1.2E+2			
A 35	6.0	3140					1.8E+1			
B 30	6.0	2710	9.6E+1	1.2E+2	3.9E+3	7.0E-1	4.2E+3	4.0E+3	4.0E+3	4.0E+3
B 31	6.0	2670	1.9E+2	9.8E+1	4.0E+3	7.3E+1	4.4E+3	4.2E+3	4.1E+3	4.1E+3
B 33	6.1	2130	2.7E+2	1.0E+2	7.9E+3	7.5E+1	8.3E+3	8.0E+3	7.9E+3	7.9E+3
C 44	8.9	4380	1.5E+3	1.0E+2	1.0E+3	5.7E+2	3.1E+3	1.8E+3	1.6E+3	1.6E+3
C 45	8.3	4360	1.4E+3	1.1E+2	5.1E+2	4.5E+2	2.4E+3	1.2E+3	9.7E+2	9.6E+2
C 46	9.0	3230	1.2E+3	1.2E+2	3.6E+3	1.2E+3	6.1E+3	5.0E+3	4.8E+3	4.8E+3
AVERAGE			5.7E+2	8.2E+1	2.6E+3	3.0E+2	3.6E+3	3.0E+3	2.9E+3	2.9E+3
HIGH			1.5E+3	1.2E+2	7.9E+3	1.2E+3	8.3E+3	8.0E+3	7.9E+3	7.9E+3
LOW			9.6E+1	9.8E+1	5.1E+2	7.0E-1	1.8E+1	1.8E+1	1.8E+1	1.8E+1

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS - µG/DRY SCM: 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2670	1.5E+3	5.0E+2	8.0	0.0	2.0E+3	3.2E+2	1.4E+1	3.0E+1
E 16	8.3	2760	1.5E+2	1.2E+3	4.6E+3	0.0	6.0E+3	5.3E+3	4.6E+3	4.6E+3
E 17	6.2	2770	7.3E+0	2.4E+2	2.1E+2	0.0	4.6E+2	3.5E+2	2.2E+2	2.1E+2
F 22	6.0	2940	2.5E+2	8.6E+1	8.6E+3	0.0	8.9E+3	8.6E+3	8.6E+3	8.6E+3
F 30	6.8	2890	3.4E+2	2.7E+2	2.1E+3	0.0	2.7E+3	2.3E+3	2.1E+3	2.1E+3
G 15	8.7	3230	3.3E+2	1.2E+2	7.6E+3	0.0	8.1E+3	7.7E+3	7.6E+3	7.6E+3
G 20	9.2	2320	1.1E+3	1.0E+2	4.9E+3	0.0	6.1E+3	5.0E+3	4.9E+3	4.9E+3
H 11	9.4	1940	1.1E+2	3.1E+1	1.2E+3	0.0	1.3E+3	1.2E+3	1.2E+3	1.2E+3
I 09	5.9	2700	3.3E+2	7.6E+1	6.0E+4	0.0	6.0E+4	6.0E+4	6.0E+4	6.0E+4
I 18	7.8	1670	2.4E+2	8.3E+1	1.3E+4	6.7E+2	1.4E+4	1.4E+4	1.4E+4	1.4E+4
J 15	7.9	1550	2.7E+1	5.8E+1	8.3E+3	5.6E+2	8.9E+3	8.9E+3	8.8E+3	8.8E+3
J 16	8.9	2570	3.3E+1	5.7E+1	2.0E+4	5.8E+2	2.1E+4	2.1E+4	2.1E+4	2.1E+4
K 18	9.8	1280	3.7E+1	0.0	5.7E+2	1.4E+3	2.0E+3	2.0E+3	2.0E+3	2.0E+3
AVERAGES										
SPREADER,NO REINJ FROM D.C.			3.6E+2	3.4E+2	4.7E+3	0.0	5.4E+3	4.9E+3	4.7E+3	4.7E+3
MASS FIRED OVERFEED			3.3E+2	1.1E+2	1.5E+4	4.6E+2	1.6E+4	1.5E+4	1.5E+4	1.5E+4
HIGH			1.5E+3	1.2E+3	6.0E+4	1.4E+3	6.0E+4	6.0E+4	6.0E+4	6.0E+4
LOW			7.3E+0	3.1E+1	2.1E+2	5.6E+2	4.6E+2	3.2E+2	1.4E+1	3.0E+1

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

MANGANESE

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J MANGANESE	EMISSIONS - µG/DRY SCM: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210	0.0					6.9E+1			
A 35	6.0	3140	0.0					3.4E+1			
B 30	6.0	2710	0.0	9.6E+1	5.3E+1	4.7E+2	1.4E+1	6.4E+2	5.4E+2	4.9E+2	4.9E+2
B 31	6.0	2670	0.0	2.9E+2	2.0E+1	4.8E+2	1.5E+1	8.1E+2	5.4E+2	5.0E+2	5.0E+2
B 33	6.1	2130	0.0	4.4E+2	3.3E+1	7.9E+2	4.5E+1	1.3E+3	9.0E+2	8.4E+2	8.3E+2
C 44	8.9	4380	0.0	1.5E+4	9.3E+2	5.0E+1	0.0	1.6E+4	2.0E+3	1.6E+2	7.4E+1
C 45	8.3	4360	0.0	1.4E+4	6.2E+2	3.0E+1	0.0	1.4E+4	1.7E+3	1.3E+2	5.2E+1
C 46	9.0	3230	0.0	1.2E+4	1.0E+2	1.5E+3	0.0	1.3E+4	2.6E+3	1.6E+3	1.5E+3
AVERAGE				5.1E+3	2.2E+2	4.2E+2	9.2E+0	5.7E+3	1.1E+3	4.8E+2	4.5E+2
HIGH				1.5E+4	9.3E+2	1.5E+3	4.5E+1	1.6E+4	2.6E+3	1.6E+3	1.5E+3
LOW				9.6E+1	2.0E+1	3.0E+1	1.4E+1	3.4E+1	3.4E+1	3.4E+1	3.4E+1

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J MANGANESE	EMISSIONS - µG/DRY SCM: 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	0.1	4.6E+2	5.9E+1	0.0	0.0	5.1E+2	4.7E+1	3.6E+0	7.7E+0
E 16	6.3	2760	0.2	2.5E+1	9.1E+0	1.4E+2	0.0	1.7E+2	1.4E+2	1.4E+2	1.4E+2
E 17	6.2	2770	0.2	7.3E+1	2.4E+1	2.1E+1	0.0	1.2E+2	3.7E+1	2.2E+1	2.2E+1
F 22	6.0	2980	0.4	8.2E+1	1.7E+1	4.3E+2	0.0	5.3E+2	4.4E+2	4.3E+2	4.3E+2
F 30	6.8	2890	0.2	1.7E+2	1.6E+1	7.0E+1	0.0	2.6E+2	8.4E+1	7.1E+1	7.1E+1
G 15	6.7	3230	0.5	3.3E+2	4.3E+1	5.3E+2	0.0	9.0E+2	5.7E+2	5.4E+2	5.3E+2
G 23	9.2	2320	0.2	2.0E+2	3.8E+1	4.9E+2	0.0	7.3E+2	5.2E+2	4.9E+2	4.9E+2
H 11	9.4	1980	1.7	6.7E+2	1.5E+1	1.2E+2	0.0	8.0E+2	1.5E+2	1.2E+2	1.3E+2
I 09	9.9	2700	1.0	3.3E+2	7.6E+1	6.0E+3	0.0	6.4E+3	6.0E+3	6.0E+3	6.0E+3
I 18	7.8	1670	0.2	1.6E+2	5.6E+1	6.7E+3	7.6E-1	6.9E+3	6.7E+3	6.7E+3	6.7E+3
J 15	7.9	1550	0.2	1.7E+1	2.2E+1	1.1E+3	0.0	1.1E+3	1.1E+3	1.1E+3	1.1E+3
J 16	8.9	2570	0.9	1.3E+1	3.5E+1	2.9E+3	2.2E-1	2.9E+3	2.9E+3	2.9E+3	2.9E+3
K 18	9.8	1280	0.0	3.7E+1	0.0	1.7E+2	2.9E+0	2.1E+2	1.7E+2	1.7E+2	1.7E+2
AVERAGES											
SPREADER, NO REINJ FROM D.C.				1.5E+2	2.5E+1	2.8E+2	0.0	4.5E+2	3.0E+2	2.8E+2	2.8E+2
MASS FIRED OVERFEED				2.4E+2	3.7E+1	2.4E+3	5.5E-1	2.7E+3	2.4E+3	2.4E+3	2.4E+3
HIGH				6.7E+2	7.6E+1	6.7E+3	2.9E+0	6.9E+3	6.7E+3	6.7E+3	6.7E+3
LOW				1.3E+1	9.1E+0	2.1E+1	2.2E-1	1.2E+2	3.7E+1	3.6E+0	7.7E+0

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

IRON

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J IRON	*- - - E M I S S I O N S - µG/DRY SCM* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210	156.4					1.0E+3			
A 35	6.8	3140	152.9					1.1E+3			
B 30	6.0	2710	120.3	3.8E+4	1.8E+4	7.9E+3	1.4E+4	7.9E+4	3.9E+4	2.2E+4	2.2E+4
B 31	6.0	2670	120.4	3.9E+4	2.0E+4	8.1E+3	7.3E+2	6.8E+4	2.7E+4	9.2E+3	8.9E+3
B 33	6.1	2130	98.4	8.8E+4	3.3E+4	3.9E+4	4.5E+3	1.7E+5	7.7E+4	4.5E+4	4.4E+4
C 44	8.9	4380	137.7	7.3E+5	4.8E+3	3.0E+3	0.0	7.4E+5	7.0E+4	8.2E+3	4.1E+3
C 45	8.3	4360	156.6	6.8E+5	3.6E+3	5.1E+3	0.0	6.9E+5	6.7E+4	9.8E+3	6.1E+3
C 46	9.0	3230	561.7	1.2E+6	9.6E+3	7.6E+3	1.3E+3	1.2E+6	1.2E+5	1.7E+4	1.1E+4
AVERAGE				3.4E+5	1.1E+4	8.9E+3	2.6E+3	3.7E+5	5.0E+4	1.4E+4	1.2E+4
HIGH				1.2E+6	3.3E+4	3.9E+4	1.4E+4	1.2E+6	1.2E+5	4.5E+4	4.4E+4
LOW				3.8E+4	3.6E+3	3.0E+3	7.3E+2	1.0E+3	1.0E+3	1.0E+3	1.0E+3

• STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR •

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J IRON	*- - - E M I S S I O N S - µG/DRY SCM* 10.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	13.2	2070	146.7	2.3E+4	1.0E+4	8.3	0.0	3.3E+4	6.4E+3	2.3E+2	5.8E+2
E 16	8.3	2760	100.0	1.8E+4	2.1E+3	1.2E+4	0.0	3.1E+4	1.3E+4	1.2E+4	1.2E+4
E 17	6.2	2770	120.4	2.4E+4	1.7E+4	2.1E+3	0.0	4.4E+4	1.2E+4	2.4E+3	2.3E+3
F 22	6.0	2980	337.8	1.6E+5	5.8E+3	4.3E+4	0.0	2.1E+5	5.1E+4	4.4E+4	4.4E+4
F 30	6.8	2890	215.7	5.7E+4	5.5E+3	1.7E+4	0.0	8.0E+4	2.2E+4	1.8E+4	1.8E+4
G 15	8.7	3230	154.4	6.6E+4	1.2E+4	1.9E+4	0.0	9.6E+4	2.8E+4	2.0E+4	1.9E+4
G 20	9.2	2320	73.4	6.6E+4	3.8E+3	1.2E+4	0.0	8.2E+4	1.6E+4	1.3E+4	1.3E+4
H 11	9.4	1980	391.4	3.3E+4	3.1E+3	5.3E+3	0.0	4.2E+4	8.0E+3	5.5E+3	5.8E+3
I 09	5.9	2700	514.4	1.7E+5	1.4E+4	2.4E+5	0.0	4.2E+5	2.5E+5	2.4E+5	2.4E+5
I 18	7.8	1670	220.8	2.0E+5	1.4E+4	8.0E+4	1.7E+1	2.9E+5	9.4E+4	8.2E+4	8.3E+4
J 15	7.9	1550	192.4	8.3E+3	1.8E+4	8.3E+4	3.5E+3	1.1E+5	1.1E+5	8.7E+4	8.7E+4
J 16	8.9	2570	397.0	6.7E+3	1.4E+4	1.1E+5	3.6E+3	1.4E+5	1.4E+5	1.2E+5	1.2E+5
K 18	9.8	1280	189.1	1.2E+4	0.0	3.4E+3	4.3E+3	2.0E+4	8.1E+3	7.8E+3	7.9E+3
AVERAGES											
SPREADER, NO REINJ FROM D.C.				6.6E+4	7.6E+3	1.8E+4	0.0	9.1E+4	2.4E+4	1.8E+4	1.8E+4
MASS FIRED OVERFEED				6.4E+4	1.1E+4	7.5E+4	1.6E+3	1.5E+5	8.9E+4	7.7E+4	7.8E+4
HIGH				2.0E+5	1.8E+4	2.4E+5	4.3E+3	4.2E+5	2.5E+5	2.4E+5	2.4E+5
LOW				6.7E+3	2.1E+3	2.1E+3	1.7E+1	2.0E+4	6.4E+3	2.3E+2	5.0E+2

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

COBALT

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT OZ	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210					1.3E+1			
							6.3E+0			
A 35	6.0	3140								
B 30	6.0	2710	2.9E+1	6.2E+1	1.6E+2	1.4E+1	2.6E+2	2.2E+2	1.7E+2	1.7E+2
B 31	6.0	2670	9.7E+1	5.9E+1	1.6E+2	5.8E+0	3.2E+2	2.2E+2	1.7E+2	1.7E+2
B 33	6.1	2130	8.8E+1	1.0E+2	3.1E+2	6.8E+0	5.1E+2	4.1E+2	3.2E+2	3.2E+2
C 44	8.9	4380	1.5E+2	1.2E+1	1.5E+1	3.8E+1	2.1E+2	7.5E+1	5.4E+1	5.3E+1
C 45	8.3	4360	1.4E+2	9.6E+0	1.0E+1	0.0	1.6E+2	2.9E+1	1.1E+1	1.0E+1
C 46	9.0	3230	3.5E+2	4.8E+1	1.5E+2	5.1E+1	6.0E+2	2.7E+2	2.1E+2	2.0E+2
AVERAGE			1.1E+2	3.7E+1	1.0E+2	1.4E+1	2.6E+2	1.6E+2	1.2E+2	1.2E+2
HIGH			3.5E+2	1.0E+2	3.1E+2	5.1E+1	6.0E+2	4.1E+2	3.2E+2	3.2E+2
LOW			2.9E+1	9.6E+0	1.0E+1	5.8E+0	6.3E+0	6.3E+0	6.3E+0	6.3E+0

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT OZ	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	1.5E+1	1.3E+2	0.0	0.0	1.4E+2	7.1E+1	1.0E+0	2.1E+0
E 16	8.3	2760	1.5E+2	1.8E+2	1.8E+2	0.0	5.2E+2	2.9E+2	1.9E+2	1.9E+2
E 17	6.2	2770	7.3E+1	1.5E+2	3.7E+0	0.0	2.2E+2	8.6E+1	5.3E+0	4.6E+0
F 22	6.0	2980	2.5E+2	1.7E+1	3.4E+2	0.0	6.1E+2	3.6E+2	3.5E+2	3.4E+2
F 30	6.8	2890	3.4E+2	2.7E+1	7.0E+1	0.0	4.4E+2	9.6E+1	7.2E+1	7.1E+1
G 15	8.7	3230	1.5E+2	7.2E+1	3.8E+1	0.0	2.6E+2	8.3E+1	4.0E+1	3.9E+1
G 20	9.2	2320	1.8E+2	6.3E+1	2.5E+1	0.0	2.6E+2	6.5E+1	2.6E+1	2.5E+1
H 11	9.4	1980	1.0E+2	5.1E+1	4.7E+1	0.0	2.0E+2	7.8E+1	4.8E+1	4.9E+1
I 09	5.9	2700	5.3E+1	2.8E+1	1.8E+3	0.0	1.9E+3	1.8E+3	1.8E+3	1.8E+3
I 16	7.8	1670	6.3E+1	5.6E+1	6.7E+2	4.2E+1	8.3E+2	7.4E+2	7.1E+2	7.1E+2
J 15	7.9	1550	1.0E+1	5.8E+1	3.3E+2	0.0	4.0E+2	4.0E+2	3.3E+2	3.3E+2
J 16	8.9	2570	3.3E+0	3.5E+1	5.2E+2	3.6E+1	5.9E+2	5.9E+2	5.5E+2	5.5E+2
K 18	9.8	1280	2.5E+1	0.0	1.1E+1	1.4E+0	3.7E+1	1.4E+1	1.3E+1	1.3E+1
AVERAGES										
SPREADER,NO REINJ FROM D.C.			1.9E+2	8.5E+1	1.1E+2	0.0	3.9E+2	1.6E+2	1.1E+2	1.1E+2
MASS FIRED OVERFEED			3.8E+1	5.1E+1	4.8E+2	1.1E+1	5.8E+2	5.3E+2	4.9E+2	4.9E+2
HIGH			3.4E+2	1.8E+2	1.8E+3	4.2E+1	1.9E+3	1.8E+3	1.8E+3	1.8E+3
LOW			3.3E+0	1.7E+1	3.7E+0	1.4E+0	3.7E+1	1.4E+1	1.0E+0	2.1E+0

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

NICKEL

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS - µG/DRY SCM: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210					1.2E+2			
A 35	6.0	3140					3.8E+1			
B 30	6.0	2710	9.6E+1	1.5E+2	1.6E+4	7.0E+2	1.7E+4	1.7E+4	1.7E+4	1.6E+4
B 31	6.0	2670	9.7E+1	1.0E+2	1.6E+4	4.4E+2	1.7E+4	1.7E+4	1.7E+4	1.7E+4
B 33	6.1	2130	8.8E+1	1.4E+2	2.4E+4	4.5E+2	2.4E+4	2.4E+4	2.4E+4	2.4E+4
C 44	5.9	4380	1.5E+3	4.3E+1	2.0E+3	2.5E+3	6.1E+3	4.7E+3	4.6E+3	4.6E+3
C 45	6.3	4360	8.1E+2	4.8E+1	4.6E+2	0.0	1.3E+3	5.6E+2	4.6E+2	4.6E+2
C 46	9.0	3230	1.9E+3	5.7E+1	2.5E+3	5.1E+3	9.6E+3	7.9E+3	7.7E+3	7.7E+3
AVERAGE			5.5E+2	6.7E+1	7.6E+3	1.2E+3	9.4E+3	8.8E+3	8.7E+3	8.7E+3
HIGH			1.9E+3	1.5E+2	2.4E+4	5.1E+3	2.4E+4	2.4E+4	2.4E+4	2.4E+4
LOW			8.8E+1	4.3E+1	4.6E+2	4.4E+2	3.8E+1	3.8E+1	3.8E+1	3.8E+1

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS - µG/DRY SCM: 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2670	4.6E+2	2.6E+2	0.0	0.0	7.2E+2	1.6E+2	5.0E+0	1.1E+1
E 16	8.3	2760	1.5E+2	3.0E+2	4.6E+2	0.0	9.2E+2	6.3E+2	4.6E+2	4.6E+2
E 17	6.2	2770	1.5E+2	2.4E+2	3.7E+2	0.0	7.6E+2	5.1E+2	3.8E+2	3.7E+2
F 22	6.0	2980	2.5E+2	2.9E+1	6.9E+3	0.0	7.1E+3	6.9E+3	6.9E+3	6.9E+3
F 30	6.8	2890	1.7E+2	1.6E+2	2.1E+3	0.0	2.4E+3	2.2E+3	2.1E+3	2.1E+3
G 15	8.7	3230	3.3E+2	1.2E+2	1.5E+3	0.0	2.0E+3	1.6E+3	1.5E+3	1.5E+3
G 20	9.2	2320	4.4E+2	3.8E+2	3.3E+3	0.0	4.1E+3	3.5E+3	3.3E+3	3.3E+3
H 11	9.4	1980	1.1E+2	3.1E+2	2.3E+3	0.0	2.8E+3	2.5E+3	2.3E+3	2.3E+3
I 09	5.9	2700	5.3E+2	1.9E+2	1.2E+3	0.0	1.9E+3	1.3E+3	1.2E+3	1.2E+3
I 18	7.8	1670	1.6E+2	1.4E+2	2.3E+4	6.7E+1	2.4E+4	2.4E+4	2.3E+4	2.3E+4
J 15	7.9	1550	6.6E+0	2.2E+2	1.7E+4	0.0	1.7E+4	1.7E+4	1.7E+4	1.7E+4
J 16	8.9	2570	5.0E+0	2.1E+2	2.6E+4	2.2E+1	2.6E+4	2.6E+4	2.6E+4	2.6E+4
K 18	9.8	1280	1.2E+2	0.0	1.1E+3	7.1E+2	2.0E+3	1.8E+3	1.8E+3	1.8E+3
AVERAGES										
SPREADER, NO REINJ FROM D.C.			2.5E+2	2.1E+2	2.4E+3	0.0	2.9E+3	2.6E+3	2.4E+3	2.4E+3
MASS FIRED OVERFEED			2.0E+2	1.9E+2	1.0E+4	1.1E+2	1.1E+4	1.0E+4	1.0E+4	1.0E+4
HIGH			5.3E+2	3.8E+2	2.6E+4	7.1E+2	2.6E+4	2.6E+4	2.6E+4	2.6E+4
LOW			5.0E+0	2.9E+1	3.7E+2	2.2E+1	7.2E+2	1.6E+2	5.0E+0	1.1E+1

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

COPPER

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210					5.3E+1			
A 35	6.0	3140					2.0E+1			
B 30	6.0	2710	9.6E+1	8.4E+2	4.7E+1	2.8E+2	1.3E+3	9.7E+2	3.3E+2	3.3E+2
B 31	6.0	2670	2.9E+2	5.4E+2	4.8E+1	4.4E+2	1.3E+3	9.1E+2	4.9E+2	4.9E+2
B 33	6.1	2130	2.7E+2	5.5E+2	1.6E+2	3.0E+2	1.3E+3	8.9E+2	4.6E+2	4.6E+2
C 44	8.9	4380	1.5E+3	2.1E+2	1.0E+2	8.9E+2	2.7E+3	1.3E+3	1.0E+3	9.9E+2
C 45	8.3	4360	2.7E+3	2.2E+2	1.0E+2	0.0	3.0E+3	5.0E+2	1.2E+2	1.1E+2
C 46	9.0	3230	3.5E+2	1.6E+2	5.1E+1	0.0	5.6E+2	2.0E+2	5.4E+1	5.2E+1
AVERAGE			6.5E+2	3.1E+2	6.3E+1	2.4E+2	1.3E+3	6.0E+2	3.2E+2	3.1E+2
HIGH			2.7E+3	8.4E+2	1.6E+2	8.9E+2	3.0E+3	1.3E+3	1.0E+3	9.9E+2
LOW			9.6E+1	1.6E+2	4.7E+1	2.8E+2	2.0E+1	2.0E+1	2.0E+1	2.0E+1

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	6.1E+2	2.3E+3	0.0	0.0	2.9E+3	1.3E+3	2.1E+1	4.4E+1
E 16	8.3	2760	2.3E+1	3.0E+1	9.2E+0	0.0	6.3E+1	2.7E+1	9.6E+0	9.4E+0
E 17	6.2	2770	2.2E+2	1.5E+2	3.7E+0	0.0	3.7E+2	9.1E+1	6.3E+0	5.2E+0
F 22	6.0	2980	4.9E+1	8.6E+1	1.7E+1	0.0	1.5E+2	6.6E+1	1.9E+1	1.8E+1
F 30	6.8	2890	1.7E+2	8.2E+1	2.1E+0	0.0	2.6E+2	5.3E+1	3.9E+0	3.1E+0
G 15	8.7	3230	4.9E+2	4.3E+2	2.3E+1	0.0	9.5E+2	2.8E+2	2.9E+1	2.7E+1
G 20	9.2	2320	4.4E+2	2.5E+2	2.4E+1	0.0	7.2E+2	1.8E+2	2.9E+1	2.7E+1
H 11	9.4	1980	3.3E+2	2.1E+2	1.2E+2	0.0	6.6E+2	2.4E+2	1.2E+2	1.2E+2
I 09	5.9	2700	5.3E+2	7.6E+2	3.0E+2	0.0	1.6E+3	7.3E+2	3.1E+2	3.2E+2
I 18	7.8	1670	2.4E+2	8.3E+2	2.0E+2	4.2E+3	5.5E+3	4.9E+3	4.4E+3	4.4E+3
J 15	7.9	1550	3.3E+1	3.6E+2	3.3E+2	3.5E+3	4.2E+3	4.2E+3	3.8E+3	3.8E+3
J 16	8.9	2570	5.0E+0	3.5E+2	5.7E+2	3.6E+3	4.5E+3	4.5E+3	4.2E+3	4.2E+3
K 18	9.8	1280	1.2E+2	0.0	5.1E+1	4.3E+0	1.8E+2	5.9E+1	5.6E+1	5.7E+1
AVERAGES			2.3E+2	1.7E+2	1.3E+1	0.0	4.2E+2	1.2E+2	1.6E+1	1.5E+1
SPREADER, NO REINJ FROM D.C.			2.7E+2	6.9E+2	2.2E+2	1.6E+3	2.8E+3	2.3E+3	1.8E+3	1.9E+3
MASS FIRED OVERFEED			6.1E+2	2.3E+3	5.7E+2	4.2E+3	5.5E+3	4.9E+3	4.4E+3	4.4E+3
HIGH			5.0E+0	3.0E+1	2.1E+0	4.3E+0	6.3E+1	2.7E+1	3.9E+0	3.1E+0
LOW										

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

ZINC

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS - µG/DRY SCM: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210					3.5E+1			
A 35	6.0	3140					6.5E+1			
B 30	6.0	2710	1.9E+1	1.3E+3	1.6E+2	5.6E+1	1.6E+3	1.2E+3	2.2E+2	2.2E+2
B 31	6.0	2670	9.7E+1	7.2E+2	8.1E+1	5.8E+1	9.6E+2	6.9E+2	1.4E+2	1.4E+2
B 33	6.1	2130	8.8E+1	7.2E+2	1.6E+2	3.0E+1	1.0E+3	7.4E+2	1.9E+2	1.9E+2
C 44	8.9	4380	4.4E+2	3.0E+2	5.0E+1	0.0	7.8E+2	3.1E+2	5.6E+1	5.2E+1
C 45	8.3	4360	4.1E+2	2.0E+2	5.1E+1	0.0	6.6E+2	2.4E+2	5.5E+1	5.2E+1
C 46	9.0	3230	3.5E+2	2.9E+2	1.0E+2	0.0	7.4E+2	3.5E+2	1.1E+2	1.0E+2
AVERAGE			1.8E+2	4.4E+2	7.5E+1	1.8E+1	7.2E+2	4.5E+2	1.1E+2	1.1E+2
HIGH			4.4E+2	1.3E+3	1.6E+2	5.8E+1	1.6E+3	1.2E+3	2.2E+2	2.2E+2
LOW			1.9E+1	2.0E+2	5.0E+1	3.0E+1	3.5E+1	3.5E+1	3.5E+1	3.5E+1

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS - µG/DRY SCM: 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	9.1E+1	2.3E+3	8.0	0.0	2.4E+3	1.3E+3	1.7E+1	3.6E+1
E 16	8.3	2760	1.5E+1	6.1E+0	4.6E+0	0.0	2.6E+1	9.4E+0	4.8E+0	4.7E+0
E 17	6.2	2770	7.3E+1	4.9E+0	2.7E-1	0.0	7.8E+1	5.3E+0	8.1E-1	5.8E-1
F 22	6.0	2980	8.2E+0	1.7E+1	6.9E+0	0.0	3.2E+1	1.7E+1	7.0E+0	7.0E+0
F 30	6.8	2890	1.7E+1	8.2E+0	7.0E+0	0.0	3.2E+1	1.2E+1	7.2E+0	7.1E+0
G 15	8.7	3230	1.6E+2	4.3E+1	1.5E+1	0.0	2.2E+2	4.4E+1	1.7E+1	1.6E+1
G 20	9.2	2320	2.2E+2	3.8E+2	3.3E+1	0.0	6.3E+2	2.5E+2	3.7E+1	3.5E+1
H 11	9.4	1980	6.7E+2	1.5E+1	2.9E+1	0.0	7.1E+2	5.9E+1	3.4E+1	3.9E+1
I 09	5.9	2700	6.6E+2	2.8E+3	6.0E+2	0.0	4.1E+3	2.2E+3	6.2E+2	6.5E+2
I 18	7.8	1670	5.5E+1	5.6E+3	4.7E+1	8.4E-2	5.7E+3	3.1E+3	8.6E+1	1.3E+2
J 15	7.9	1550	2.3E+0	7.3E+2	3.3E+1	0.0	7.6E+2	7.6E+2	3.8E+1	4.4E+1
J 16	8.9	2570	5.0E+0	1.4E+3	5.2E+1	0.0	1.5E+3	1.5E+3	6.2E+1	7.3E+1
K 18	9.8	1280	2.5E+1	0.0	5.1E+1	2.9E+1	1.0E+2	8.0E+1	8.0E+1	8.0E+1
AVERAGES										
SPREADER, NO REINJ FROM D.C.			8.3E+1	7.6E+1	1.1E+1	0.0	1.7E+2	5.6E+1	1.2E+1	1.2E+1
MASS FIRED OVERFEED			2.2E+2	1.8E+3	1.2E+2	4.1E+0	2.2E+3	1.3E+3	1.3E+2	1.5E+2
HIGH			6.7E+2	5.6E+3	6.0E+2	2.9E+1	5.7E+3	3.1E+3	6.2E+2	6.5E+2
LOW			2.3E+0	4.9E+0	2.7E-1	8.4E-2	2.6E+1	5.3E+0	8.1E-1	5.8E-1

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

GALLIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS - µG/DRY SCM: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	5.8E+1	8.6E+1	1.6E+0	7.8E-1	1.5E+2	7.2E+1	3.3E+0	2.5E+0
B 31	6.6	2670	3.9E+1	4.9E+1	1.6E+0	7.3E-1	9.0E+1	4.3E+1	3.0E+0	2.5E+0
B 33	6.1	2130	5.3E+1	3.8E+1	4.7E+0	7.5E-1	9.6E+1	3.8E+1	6.1E+0	5.6E+0
C 44	6.9	4380	2.9E+2	1.5E+2	4.0E-1	1.3E+0	4.5E+2	1.4E+2	4.8E+0	2.3E+0
C 45	8.3	4360	2.7E+2	1.5E+2	1.5E-1	1.3E+0	4.2E+2	1.3E+2	4.3E+0	2.1E+0
C 46	9.0	3230	1.2E+2	8.1E+1	5.1E-1	0.0	2.0E+2	7.2E+1	1.9E+0	8.0E-1
AVERAGE			1.4E+2	9.2E+1	1.5E+0	7.9E-1	2.3E+2	9.3E+1	3.9E+0	2.6E+0
HIGH			2.9E+2	1.5E+2	4.7E+0	1.3E+0	4.5E+2	1.4E+2	6.1E+0	5.6E+0
LOW			3.9E+1	3.8E+1	1.5E-1	7.0E-1	9.0E+1	3.8E+1	1.9E+0	8.0E-1

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS - µG/DRY SCM: 10.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	1.5E+1	3.6E+2	0.0	0.0	3.8E+2	2.0E+2	2.7E+0	5.7E+0
E 16	8.3	2760	1.3E+1	9.1E+0	1.8E-1	0.0	2.2E+1	5.6E+0	3.4E-1	2.7E-1
E 17	6.2	2770	1.5E+1	2.2E+1	3.7E-2	0.0	3.7E+1	1.3E+1	2.9E-1	1.8E-1
F 22	6.0	2980	2.5E+1	2.6E+1	1.7E+0	0.0	5.2E+1	1.7E+1	2.1E+0	1.9E+0
F 30	6.8	2890	1.7E+1	2.5E+1	2.1E-1	0.0	4.2E+1	1.4E+1	5.0E-1	3.8E-1
G 15	8.7	3230	3.3E+1	2.9E+2	7.6E-1	0.0	3.2E+2	1.6E+2	3.0E+0	2.1E+0
G 20	9.2	2320	2.2E+1	1.3E+2	8.3E-1	0.0	1.5E+2	7.1E+1	1.9E+0	1.4E+0
H 11	9.4	1980	1.0E+2	4.6E+1	1.2E+0	0.0	1.5E+2	3.0E+1	2.2E+0	3.4E+0
I 09	5.9	2700	3.3E+2	9.4E+1	6.0E+1	0.0	4.8E+2	1.2E+2	6.3E+1	6.6E+1
I 18	7.8	1670	3.9E+1	1.4E+2	6.7E+0	6.7E-1	1.9E+2	8.5E+1	8.6E+0	1.0E+1
J 15	7.9	1550	1.0E+1	7.3E+1	3.3E+0	5.6E-1	8.6E+1	8.6E+1	4.4E+0	5.1E+0
J 16	8.9	2570	3.3E+0	1.4E+2	5.7E+0	7.2E-1	1.5E+2	1.5E+2	7.5E+0	8.6E+0
K 18	9.8	1280	1.2E+1	0.0	2.8E+0	7.1E+0	2.2E+1	1.0E+1	1.0E+1	1.0E+1
AVERAGES										
SPREADER, NO REINJ FROM D.C.			2.1E+1	8.3E+1	6.2E-1	0.0	1.0E+2	4.7E+1	1.3E+0	1.0E+0
MASS FIRED OVERFEED			7.3E+1	1.2E+2	1.1E+1	1.3E+0	2.1E+2	9.8E+1	1.4E+1	1.6E+1
HIGH			3.3E+2	3.6E+2	6.0E+1	7.1E+0	4.8E+2	2.0E+2	6.3E+1	6.6E+1
LOW			3.3E+0	9.1E+0	3.7E-2	5.6E-1	2.2E+1	5.6E+0	2.9E-1	1.8E-1

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

GERMANIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	2.9E+0	2.8E+0	1.6E+1	2.8E+0	2.4E+1	2.8E+1	1.9E+1	1.9E+1
B 31	6.0	2670	1.9E+1	3.5E+0	1.6E+1	2.9E+0	4.2E+1	2.3E+1	1.9E+1	1.9E+1
B 33	6.1	2130	1.8E+1	1.1E+1	1.6E+1	3.0E+0	4.7E+1	2.9E+1	1.9E+1	1.9E+1
C 44	8.9	4380	4.4E+1	6.6E+0	2.8E+0	6.4E-1	5.3E+1	1.1E+1	3.0E+0	2.7E+0
C 45	8.3	4360	1.4E+2	4.7E+0	2.0E-1	6.4E-1	1.4E+2	1.6E+1	1.8E+0	1.1E+0
C 46	9.0	3230	1.2E+2	9.7E+0	3.6E+0	6.4E-1	1.3E+2	2.2E+1	5.1E+0	4.4E+0
AVERAGE			5.6E+1	6.3E+0	8.9E+0	1.8E+0	7.3E+1	2.0E+1	1.1E+1	1.1E+1
HIGH			1.4E+2	1.1E+1	1.6E+1	3.0E+0	1.4E+2	2.9E+1	1.9E+1	1.9E+1
LOW			2.9E+0	2.0E+0	2.0E-1	6.4E-1	2.4E+1	1.1E+1	1.8E+0	1.1E+0

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 10.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	4.6E+1	1.9E+1	0.0	0.0	6.4E+1	1.2E+1	4.5E-1	1.0E+0
E 16	8.3	2760	1.5E+1	3.0E+0	4.6E-1	0.0	1.9E+1	2.6E+0	5.9E-1	5.3E-1
E 17	6.2	2770	1.5E+1	2.4E+0	1.6E-1	0.0	1.7E+1	2.0E+0	2.8E-1	2.3E-1
F 22	6.0	2980	7.4E+0	8.6E+1	3.4E+0	0.0	9.7E+1	5.1E+1	4.1E+0	3.8E+0
F 30	6.8	2890	3.4E+1	2.7E+1	7.0E-1	0.0	6.2E+1	1.7E+1	1.1E+0	9.5E-1
G 15	8.7	3230	4.9E+1	7.2E+1	1.5E+1	0.0	1.4E+2	5.7E+1	1.6E+1	1.6E+1
G 20	9.2	2320	4.4E+1	6.3E+1	1.6E+1	0.0	1.2E+2	5.2E+1	1.7E+1	1.7E+1
H 11	9.4	1980	1.0E+2	1.5E+1	1.8E+0	0.0	1.2E+2	1.3E+1	2.6E+0	3.5E+0
I 09	5.9	2700	3.3E+2	1.9E+3	3.6E+2	0.0	2.6E+3	1.4E+3	3.7E+2	3.9E+2
I 18	7.8	1670	6.3E+1	8.3E+2	2.7E+1	5.1E+0	9.3E+2	4.9E+2	3.8E+1	4.5E+1
J 15	7.9	1550	1.0E+1	2.2E+2	5.5E+0	4.2E+0	2.4E+2	2.4E+2	1.1E+1	1.3E+1
J 16	8.9	2570	5.0E+0	5.7E+2	2.9E+1	4.3E+3	6.0E+2	6.0E+2	3.7E+1	4.2E+1
K 18	9.8	1260	1.2E+1	0.0	5.7E+0	1.4E+1	3.2E+1	2.0E+1	2.0E+1	2.0E+1
AVERAGES										
SPREADER,NO REINJ FROM D.C.			2.8E+1	4.2E+1	6.1E+0	0.0	7.6E+1	3.0E+1	6.6E+0	6.3E+0
MASS FIRED OVERFEED			8.1E+1	5.1E+2	6.1E+1	4.0E+0	6.5E+2	4.0E+2	6.9E+1	7.4E+1
HIGH			3.3E+2	1.9E+3	3.6E+2	1.4E+1	2.6E+3	1.4E+3	3.7E+2	3.9E+2
LOW			5.0E+0	2.4E+0	1.6E-1	4.2E+0	1.7E+1	2.0E+0	2.8E-1	2.3E-1

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

ARSENIC

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210					3.4E-1			
A 35	6.8	3140					4.2E-1			
B 30	6.8	2710	9.6E+0	9.8E+1	5.6E-1	7.0E-1	1.1E+2	7.5E+1	2.0E+0	1.4E+0
B 31	6.0	2670	2.9E+1	4.0E+1	2.5E+0	3.6E-1	7.2E+1	3.5E+1	3.4E+0	3.0E+0
B 33	6.1	2130	2.7E+1	8.1E+1	2.5E+0	3.8E-1	1.1E+2	6.6E+1	3.6E+0	3.0E+0
C 44	8.9	4380	8.8E+1	8.9E+1	2.1E+0	1.0E+0	1.8E+2	7.7E+1	4.3E+0	3.3E+0
C 45	8.3	4360	4.1E+2	6.4E+1	1.1E+0	1.0E+0	4.7E+2	8.5E+1	5.4E+0	2.8E+0
C 46	9.0	3230	4.7E+2	3.1E+2	1.6E+0	1.0E+0	7.8E+2	2.8E+2	8.0E+0	3.7E+0
AVERAGE			1.3E+2	8.5E+1	1.3E+0	5.4E-1	2.2E+2	7.7E+1	3.4E+0	2.3E+0
HIGH			4.7E+2	3.1E+2	2.5E+0	1.0E+0	7.8E+2	2.8E+2	8.0E+0	3.7E+0
LOW			9.6E+0	4.0E+1	5.6E-1	3.6E-1	3.4E-1	3.4E-1	3.4E-1	3.4E-1

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	6.1E+1	2.4E+2	0.0	0.0	3.0E+2	1.3E+2	2.1E+0	4.4E+0
E 16	8.3	2760	1.5E+1	1.8E+1	2.0E+0	0.0	3.6E+1	1.3E+1	2.2E+0	2.1E+0
E 17	6.2	2770	7.3E+1	2.2E+1	5.7E-1	0.0	9.6E+1	1.5E+1	1.2E+0	1.0E+0
F 22	6.0	2980	4.9E+1	2.6E+1	8.1E-1	0.0	7.6E+1	1.7E+1	1.3E+0	1.1E+0
F 30	6.8	2890	5.7E+1	2.5E+1	8.2E-1	0.0	8.3E+1	1.6E+1	1.4E+0	1.1E+0
G 15	8.7	3230	1.3E+2	1.2E+2	7.9E-1	0.0	2.5E+2	6.9E+1	2.5E+0	1.8E+0
G 20	9.2	2320	4.4E+1	6.3E+1	2.5E+0	0.0	1.1E+2	3.9E+1	3.3E+0	2.9E+0
H 11	9.4	1980	1.1E+3	3.1E+1	1.2E+1	0.0	1.2E+3	6.5E+1	2.0E+1	2.9E+1
I 09	5.9	2700	5.3E+2	7.6E+2	1.8E+3	0.0	3.1E+3	2.2E+3	1.8E+3	1.8E+3
I 18	7.8	1670	3.9E+2	1.4E+3	4.7E+2	8.4E+0	2.3E+3	1.3E+3	4.9E+2	5.0E+2
J 15	7.9	1550	1.0E+2	2.9E+2	3.3E+1	4.2E+0	4.3E+2	4.3E+2	4.0E+1	4.3E+1
J 16	8.9	2570	3.3E+0	2.8E+2	5.7E+1	7.2E+0	3.5E+2	3.5E+2	6.7E+1	6.9E+1
K 18	9.8	1280	3.7E+1	0.0	1.1E+1	2.9E+0	5.1E+1	1.5E+1	1.4E+1	1.5E+1
AVERAGES										
SPREADER,NO REINJ FROM D.C.			6.2E+1	4.5E+1	1.2E+0	0.0	1.1E+2	2.8E+1	2.0E+0	1.7E+0
MASS FIRED OVERFEED			3.2E+2	4.3E+2	3.4E+2	3.2E+0	1.1E+3	6.4E+2	3.5E+2	3.5E+2
HIGH			1.1E+3	1.4E+3	1.8E+3	8.4E+0	3.1E+3	2.2E+3	1.8E+3	1.8E+3
LOW			3.3E+0	1.8E+1	5.7E-1	2.9E+0	3.6E+1	1.3E+1	1.2E+0	1.0E+0

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

SELENIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210					1.3E+0			
A 35	6.0	3140					1.7E+0			
B 30	6.0	2710	9.6E+0	1.9E+1	7.9E+1	1.4E+1	1.2E+2	1.1E+2	9.3E+1	9.3E+1
B 31	6.0	2670	9.7E+0	1.0E+1	8.1E+1	1.5E+1	1.1E+2	1.0E+2	9.5E+1	9.5E+1
B 33	6.1	2130	8.8E+0	1.5E+1	7.9E+1	1.5E+1	1.2E+2	1.1E+2	9.4E+1	9.4E+1
C 44	8.9	4380	2.9E+2	1.3E+1	5.0E+0	0.0	3.1E+2	4.0E+1	7.2E+0	5.5E+0
C 45	8.3	4360	1.4E+2	5.5E+0	1.0E+0	0.0	1.4E+2	1.7E+1	2.0E+0	1.2E+0
C 46	9.0	3230	2.3E+2	1.5E+1	1.0E+1	0.0	2.6E+2	4.2E+1	1.2E+1	1.1E+1
AVERAGE			8.6E+1	9.6E+0	3.2E+1	5.5E+0	1.3E+2	5.2E+1	3.8E+1	3.8E+1
HIGH			2.9E+2	1.9E+1	8.1E+1	1.5E+1	3.1E+2	1.1E+2	9.5E+1	9.5E+1
LOW			8.8E+0	5.5E+0	1.0E+0	1.4E+1	1.3E+0	1.3E+0	1.3E+0	1.2E+0

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	1.5E+0	3.2E+0	0.0	0.0	4.7E+0	1.8E+0	3.3E-2	7.1E-2
E 16	8.3	2760	5.1E+1	3.0E+0	3.2E+0	0.0	5.7E+1	6.5E+0	3.6E+0	3.4E+0
E 17	6.2	2770	4.9E+1	7.3E-1	2.1E-1	0.0	5.0E+1	2.2E+0	5.6E-1	4.1E-1
F 22	6.0	2980	1.6E+2	5.8E+0	1.7E+0	0.0	1.7E+2	1.0E+1	2.9E+0	2.4E+0
F 30	6.8	2890	1.1E+2	5.5E+0	1.4E+0	0.0	1.2E+2	8.1E+0	2.2E+0	1.9E+0
G 15	8.7	3230	1.6E+1	1.4E+0	1.5E+1	0.0	3.3E+1	1.7E+1	1.5E+1	1.5E+1
G 20	9.2	2320	1.5E+1	8.8E-1	8.2E+0	0.0	2.5E+1	9.1E+0	8.3E+0	8.2E+0
H 11	9.4	1980	3.3E+0	4.6E-1	1.2E+0	0.0	5.0E+0	1.5E+0	1.2E+0	1.2E+0
I 09	5.9	2700	6.6E+0	9.4E-1	6.0E+1	0.0	6.7E+1	6.0E+1	6.0E+1	6.0E+1
I 18	7.8	1670	7.9E+0	1.4E+0	6.7E+2	6.7E+0	6.8E+2	6.8E+2	6.7E+2	6.7E+2
J 15	7.9	1550	6.6E-1	1.5E+0	2.2E+1	5.6E+0	3.0E+1	3.0E+1	2.8E+1	2.8E+1
J 16	8.9	2570	3.3E-1	1.4E+0	3.4E+1	5.8E+0	4.2E+1	4.2E+1	4.0E+1	4.0E+1
K 18	9.8	1280	2.3E+0	0.0	1.1E+1	1.4E+1	2.8E+1	2.6E+1	2.6E+1	2.6E+1
AVERAGES										
SPREADER,NO REINJ FROM D.C.			6.9E+1	2.9E+0	5.0E+0	0.0	7.6E+1	8.8E+0	5.5E+0	5.3E+0
MASS FIRED OVERFEED			3.3E+0	1.3E+0	1.1E+2	4.6E+0	1.2E+2	1.2E+2	1.2E+2	1.2E+2
HIGH			1.6E+2	5.8E+0	6.7E+2	1.4E+1	6.8E+2	6.8E+2	6.7E+2	6.7E+2
LOW			3.3E-1	4.6E-1	2.1E-1	5.6E+0	4.7E+0	1.5E+0	3.3E-2	7.1E-2

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

BROMINE

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	2.9E+0	1.2E+0	1.6E+0	4.2E+0	9.9E+0	6.9E+0	5.8E+0	5.8E+0
B 31	6.0	2670	2.9E+0	5.5E-1	1.6E+0	4.4E+0	9.5E+0	6.7E+0	6.0E+0	6.0E+0
B 33	6.1	2130	8.8E+0	1.6E+0	1.6E+0	4.5E+0	1.7E+1	8.1E+0	6.2E+0	6.1E+0
C 44	8.9	4380	1.5E+1	2.3E+0	1.0E-1	0.0	1.7E+1	3.1E+0	2.2E-1	1.3E-1
C 45	8.3	4360	6.8E+0	1.1E+0	1.0E-1	0.0	8.0E+0	1.5E+0	1.6E-1	1.1E-1
C 46	9.0	3230	1.2E+1	2.4E+0	5.1E-2	0.0	1.4E+1	2.9E+0	1.5E-1	7.2E-2
AVERAGE			8.0E+0	1.5E+0	8.4E-1	2.2E+0	1.3E+1	4.9E+0	3.1E+0	3.0E+0
HIGH			1.5E+1	2.4E+0	1.6E+0	4.5E+0	1.7E+1	8.1E+0	6.2E+0	6.1E+0
LOW			2.9E+0	5.5E-1	5.1E-2	4.2E+0	8.0E+0	1.5E+0	1.5E-1	7.2E-2

• STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR •

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	4.6E-1	3.5E+0	0.0	0.0	4.0E+0	2.0E+0	2.0E-2	6.0E-2
E 16	8.3	2760	7.6E+0	3.0E+0	1.4E+1	0.0	2.5E+1	1.6E+1	1.4E+1	1.4E+1
E 17	6.2	2770	7.3E+0	4.9E+0	3.7E-1	0.0	1.3E+1	3.3E+0	4.6E-1	4.2E-1
F 22	6.8	2980	1.6E+1	2.9E+0	5.1E+0	0.0	2.4E+1	7.3E+0	5.3E+0	5.2E+0
F 30	6.8	2690	5.7E+0	2.7E+0	2.1E+0	0.0	1.1E+1	3.8E+0	2.2E+0	2.1E+0
G 15	8.7	3230	3.3E+1	4.3E+0	7.6E+0	0.0	4.5E+1	1.1E+1	7.9E+0	7.8E+0
G 20	9.2	2320	1.5E+1	3.8E+0	4.1E+1	0.0	6.0E+1	4.3E+1	4.1E+1	4.1E+1
H 11	9.4	1980	3.3E+0	1.5E-1	2.3E+0	0.0	5.8E+0	2.5E+0	2.4E+0	2.4E+0
I 09	5.9	2700	1.3E+1	6.6E+0	3.0E+2	0.0	3.2E+2	3.0E+2	3.0E+2	3.0E+2
I 10	7.8	1670	1.6E+1	5.6E+1	3.3E+1	2.5E+1	1.3E+2	9.0E+1	5.9E+1	6.0E+1
J 15	7.9	1550	2.3E+0	1.5E+1	2.2E+1	3.5E+1	7.4E+1	7.4E+1	5.7E+1	5.7E+1
J 16	8.9	2570	5.0E-1	2.1E+0	4.0E+1	3.6E+1	7.9E+1	7.9E+1	7.6E+1	7.6E+1
K 18	9.8	1280	2.5E+0	0.0	1.1E+1	2.1E+1	3.5E+1	3.3E+1	3.3E+1	3.3E+1
AVERAGES										
SPREADER,NO REINJ FROM D.C.			1.4E+1	3.6E+0	1.2E+1	0.0	3.0E+1	1.4E+1	1.2E+1	1.2E+1
MASS FIRED OVERFEED			5.4E+0	1.2E+1	5.8E+1	1.7E+1	9.2E+1	8.3E+1	7.5E+1	7.5E+1
HIGH			3.3E+1	5.6E+1	3.0E+2	3.6E+1	3.2E+2	3.0E+2	3.0E+2	3.0E+2
LOW			4.6E-1	1.5E-1	3.7E-1	2.1E+1	4.0E+0	2.0E+0	2.0E-2	6.0E-2

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

RUBIDIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	1.9E+2	7.5E+1	2.2E-1	4.2E+0	2.7E+2	7.8E+1	6.3E+0	4.8E+0
B 31	6.0	2670	1.9E+2	7.1E+1	4.9E-1	4.4E+0	2.7E+2	7.5E+1	6.7E+0	5.3E+0
B 33	6.1	2130	1.8E+2	8.9E+1	2.1E-1	4.5E+0	2.7E+2	8.7E+1	6.6E+0	5.1E+0
C 44	8.9	4380	2.9E+3	7.1E+1	1.5E+0	0.0	3.0E+3	3.1E+2	2.2E+1	6.0E+0
C 45	8.3	4360	2.7E+3	7.5E+1	1.0E-1	0.0	2.8E+3	2.9E+2	2.0E+1	4.3E+0
C 46	9.0	3230	1.2E+3	1.2E+2	2.0E-1	0.0	1.3E+3	1.9E+2	9.2E+0	2.1E+0
AVERAGE			1.2E+3	8.3E+1	4.6E-1	2.2E+0	1.3E+3	1.7E+2	1.2E+1	4.6E+0
HIGH			2.9E+3	1.2E+2	1.5E+0	4.5E+0	3.0E+3	3.1E+2	2.2E+1	6.0E+0
LOW			1.8E+2	7.1E+1	1.0E-1	4.2E+0	2.7E+2	7.5E+1	6.3E+0	2.1E+0

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	13.2	2070	1.1E+2	1.2E+2	0.0	0.0	2.3E+2	7.1E+1	1.6E+0	3.4E+0
E 16	4.3	2760	7.6E+1	3.0E+1	9.2E-2	0.0	1.1E+2	1.9E+1	8.4E-1	5.2E-1
E 17	6.2	2770	7.3E+1	7.3E+1	5.3E-2	0.0	1.5E+2	4.3E+1	1.1E+0	6.4E-1
F 22	6.0	2980	2.5E+0	2.3E+0	2.6E-1	0.0	5.0E+0	1.6E+0	2.9E-1	2.8E-1
F 30	6.8	2890	4.0E+0	1.9E+0	3.5E-2	0.0	6.0E+0	1.2E+0	7.6E-2	5.9E-2
G 15	8.7	3230	4.9E+2	4.3E+1	7.6E-1	0.0	5.4E+2	4.0E+1	4.5E+0	2.9E+0
G 20	9.2	2320	1.8E+2	5.0E+1	3.3E+0	0.0	2.3E+2	3.7E+1	4.9E+0	4.2E+0
H 11	9.4	1980	7.8E+1	1.5E+1	1.8E-1	0.0	9.4E+1	1.1E+1	8.3E-1	1.6E+0
I 09	5.9	2700	2.6E+2	1.9E+2	4.8E+1	0.0	5.0E+2	1.6E+2	5.1E+1	5.4E+1
I 18	7.8	1670	6.3E+1	1.4E+2	2.0E+0	8.4E-2	2.0E+2	8.0E+1	3.5E+0	5.1E+0
J 15	7.9	1550	6.6E+0	5.8E+1	1.1E+0	0.0	6.6E+1	6.6E+1	1.6E+0	2.1E+0
J 16	8.9	2570	6.7E+0	2.8E+2	2.9E+0	5.1E-1	2.9E+2	2.9E+2	5.4E+0	7.7E+0
K 18	9.8	1280	1.8E+1	0.0	5.7E-1	2.9E+0	2.2E+1	4.0E+0	3.5E+0	3.7E+0
AVERAGES										
SPREADER, NO REINJ FROM D.C.			1.4E+2	3.4E+1	7.5E-1	0.0	1.7E+2	2.4E+1	1.9E+0	1.4E+0
MASS FIRED OVERFEED			7.8E+1	1.2E+2	7.8E+0	4.9E-1	2.0E+2	9.8E+1	9.6E+0	1.1E+1
HIGH			4.9E+2	2.8E+2	4.8E+1	2.9E+0	5.4E+2	2.9E+2	5.1E+1	5.4E+1
LOW			2.5E+0	1.9E+0	3.5E-2	8.4E-2	5.0E+0	1.2E+0	7.6E-2	5.9E-2

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

STRONTIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J STRONTIUM	EMISSIONS - µG/DRY SCM* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP - MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	0.0	1.9E+3	8.0E+2	7.9E+0	4.2E+0	2.7E+3	7.8E+2	3.1E+1	1.6E+1
B 31	6.0	2670	0.0	2.9E+3	8.2E+2	8.1E+0	4.4E+0	3.8E+3	8.9E+2	3.9E+1	1.8E+1
B 33	6.1	2130	0.0	2.7E+3	1.2E+3	7.9E+0	1.5E+1	3.9E+3	1.2E+3	5.0E+1	2.9E+1
C 44	8.9	4380	0.0	2.9E+5	1.6E+3	5.0E-1	0.0	2.9E+5	2.7E+4	2.1E+3	4.4E+2
C 45	8.3	4360	0.0	1.4E+5	1.4E+3	2.0E-1	5.8E+0	1.4E+5	1.3E+4	9.6E+2	2.1E+2
C 46	9.0	3230	0.0	2.3E+4	8.7E+2	1.5E+0	0.0	2.4E+4	2.7E+3	1.7E+2	3.8E+1
AVERAGE				7.6E+4	1.1E+3	4.3E+0	4.9E+0	7.8E+4	7.6E+3	5.5E+2	1.3E+2
HIGH				2.9E+5	1.6E+3	8.1E+0	1.5E+1	2.9E+5	2.7E+4	2.1E+3	4.4E+2
LOW				1.9E+3	8.0E+2	2.0E-1	4.2E+0	2.7E+3	7.8E+2	3.1E+1	1.6E+1

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J STRONTIUM	EMISSIONS - µG/DRY SCM* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP - MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	2.6	1.5E+2	5.9E+1	8.0	0.0	2.1E+2	3.7E+1	1.5E+0	3.2E+0
E 16	8.3	2760	1.9	2.5E+2	2.1E+2	4.1E-1	0.0	4.7E+2	1.3E+2	3.7E+0	2.3E+0
E 17	6.2	2770	0.0	2.4E+2	2.4E+2	5.3E-2	0.0	4.9E+2	1.4E+2	3.5E+0	2.0E+0
F 22	6.0	2980	1.0	2.5E+3	8.6E+1	6.9E-1	0.0	2.6E+3	1.3E+2	1.9E+1	1.1E+1
F 30	6.8	2890	2.4	1.7E+3	8.2E+1	3.5E-1	0.0	1.8E+3	1.0E+2	1.3E+1	7.6E+0
G 15	8.7	3230	2.2	3.3E+3	4.3E+2	3.0E+0	0.0	3.7E+3	3.5E+2	2.9E+1	1.8E+1
G 20	9.2	2320	1.4	2.0E+3	1.0E+2	8.3E+0	0.0	2.1E+3	1.3E+2	2.3E+1	1.7E+1
H 11	9.4	1980	0.0	4.5E+2	2.1E+1	3.5E-1	0.0	4.7E+2	2.6E+1	3.6E+0	7.3E+0
I 09	5.9	2700	0.0	1.3E+3	7.6E+1	6.0E+1	0.0	1.5E+3	1.4E+2	6.9E+1	8.0E+1
I 18	7.8	1670	2.5	2.4E+3	1.4E+2	2.0E+1	6.7E-1	2.5E+3	1.7E+2	3.8E+1	5.8E+1
J 15	7.9	1550	1.8	2.7E+2	7.3E+1	5.5E+0	7.0E-2	3.4E+2	3.4E+2	8.0E+0	1.1E+1
J 16	8.9	2570	0.0	1.3E+2	4.2E+1	1.1E+1	5.8E-1	1.9E+2	1.9E+2	1.3E+1	1.5E+1
K 18	9.8	1280	0.0	3.1E+2	0.0	3.4E-1	1.4E+0	3.1E+2	1.2E+1	3.9E+0	6.4E+0
AVERAGES											
SPREADER,NO REINJ FROM D.C.				1.7E+3	1.9E+2	2.1E+0	0.0	1.9E+3	1.6E+2	1.5E+1	9.6E+0
MASS FIRED OVERFEED				7.1E+2	5.8E+1	1.4E+1	3.9E-1	7.8E+2	1.3E+2	2.0E+1	2.6E+1
HIGH				3.3E+3	4.3E+2	6.0E+1	1.4E+0	3.7E+3	3.5E+2	6.9E+1	8.0E+1
LOW				1.3E+2	2.1E+1	5.3E-2	7.0E-2	1.9E+2	1.2E+1	1.5E+0	2.0E+0

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

YTTRIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	6.7E+1	1.7E+1	2.2E-1	2.8E+0	8.7E+1	2.1E+1	3.6E+0	3.1E+0
B 31	6.0	2670	6.8E+1	1.5E+1	3.3E-1	2.9E+0	8.6E+1	2.0E+1	3.8E+0	3.4E+0
B 33	6.1	2130	6.2E+1	3.7E+1	3.2E-1	3.0E+0	1.0E+2	3.7E+1	4.0E+0	3.5E+0
C 44	8.9	4380	7.3E+2	1.3E+1	2.0E-2	0.0	7.4E+2	7.4E+1	5.2E+0	1.1E+0
C 45	8.3	4360	6.8E+2	6.8E+0	2.0E-2	0.0	6.8E+2	6.5E+1	4.8E+0	1.0E+0
C 46	9.0	3230	3.5E+2	1.5E+1	1.0E-2	0.0	3.7E+2	4.2E+1	2.6E+0	5.6E-1
AVERAGE			3.3E+2	1.7E+1	1.5E-1	1.5E+0	3.4E+2	4.3E+1	4.0E+0	2.1E+0
HIGH			7.3E+2	3.7E+1	3.3E-1	3.0E+0	7.4E+2	7.4E+1	5.2E+0	3.5E+0
LOW			6.2E+1	6.8E+0	1.0E-2	2.8E+0	8.6E+1	2.0E+1	2.6E+0	5.6E-1

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	4.6E+2	9.0E+1	0.0	0.0	5.5E+2	6.4E+1	3.8E+0	8.2E+0
E 16	8.3	2760	1.5E+2	9.1E+1	1.8E-1	0.0	2.4E+2	5.5E+1	1.9E+0	1.2E+0
E 17	6.2	2770	7.3E+1	7.3E+1	3.2E-2	0.0	1.5E+2	4.3E+1	1.1E+0	6.2E-1
F 22	6.0	2980	2.5E+2	8.6E+0	2.6E-1	0.0	2.6E+2	1.3E+1	2.0E+0	1.3E+0
F 30	6.8	2890	1.7E+2	8.2E+0	7.0E-2	0.0	1.8E+2	1.0E+1	1.3E+0	7.9E-1
G 15	8.7	3230	1.3E+2	1.2E+1	1.5E+0	0.0	1.4E+2	1.2E+1	2.5E+0	2.1E+0
G 20	9.2	2320	1.8E+2	1.0E+1	8.3E-1	0.0	1.9E+2	1.2E+1	2.1E+0	1.6E+0
H 11	9.4	1980	1.0E+2	4.6E+0	2.9E-1	0.0	1.1E+2	6.0E+0	1.0E+0	1.9E+0
I 09	5.9	2700	2.0E+2	7.6E+0	1.2E+1	0.0	2.2E+2	2.2E+1	1.3E+1	1.5E+1
I 18	7.8	1670	2.4E+2	1.4E+1	4.7E+0	8.4E-1	2.6E+2	2.1E+1	7.3E+0	9.3E+0
J 15	7.9	1550	1.7E+1	5.8E+0	5.5E-1	7.0E-1	2.4E+1	2.4E+1	1.4E+0	1.6E+0
J 16	8.9	2570	5.0E+0	3.5E+0	5.2E+0	7.2E-1	1.4E+1	1.4E+1	5.9E+0	6.0E+0
K 18	9.8	1280	2.5E+1	0.0	1.1E+0	5.7E+3	3.1E+1	7.6E+0	7.0E+0	7.2E+0
AVERAGES										
SPREADER,NO REINJ FROM D.C.			1.6E+2	3.4E+1	4.8E-1	0.0	1.9E+2	2.4E+1	1.8E+0	1.3E+0
MASS FIRED OVERFEED			1.5E+2	1.8E+1	3.4E+0	1.1E+0	1.7E+2	2.3E+1	5.7E+0	7.0E+0
HIGH			4.6E+2	9.1E+1	1.2E+1	5.7E+0	5.5E+2	6.4E+1	1.3E+1	1.5E+1
LOW			5.0E+0	3.5E+0	3.2E-2	7.0E-1	1.4E+1	6.0E+0	1.0E+0	6.2E-1

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

ZIRCONIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	3.8E+1	3.7E+0	1.6E+0	5.6E+0	4.9E+1	1.3E+1	7.5E+0	7.2E+0
B 31	6.0	2670	9.7E+1	2.0E+1	1.6E-1	5.8E+0	1.2E+2	3.0E+1	6.8E+0	6.2E+0
B 33	6.1	2130	1.8E+2	3.6E+1	7.9E+0	6.0E+0	2.3E+2	5.7E+1	1.5E+1	1.4E+1
C 44	8.9	4380	4.4E+3	7.6E+1	3.5E-1	0.0	4.5E+3	4.4E+2	3.2E+1	7.0E+0
C 45	8.3	4360	4.1E+3	5.5E+1	4.1E-1	0.0	4.1E+3	4.0E+2	2.9E+1	6.6E+0
C 46	9.0	3230	8.2E+2	3.2E+1	2.0E+0	0.0	8.5E+2	9.8E+1	8.0E+0	3.3E+0
AVERAGE			1.6E+3	3.7E+1	2.1E+0	2.9E+0	1.6E+3	1.7E+2	1.6E+1	7.4E+0
HIGH			4.4E+3	7.6E+1	7.9E+0	6.0E+0	4.5E+3	4.4E+2	3.2E+1	1.4E+1
LOW			3.8E+1	3.7E+0	1.6E-1	5.6E+0	4.9E+1	1.3E+1	6.8E+0	3.3E+0

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	1.5E+2	3.0E+1	0.0	0.0	1.8E+2	2.1E+1	1.3E+0	2.7E+0
E 16	8.3	2760	5.1E+2	2.7E+2	4.6E+0	0.0	7.9E+2	1.7E+2	1.0E+1	7.7E+0
E 17	6.2	2770	4.9E+2	2.2E+2	5.3E-2	0.0	7.1E+2	1.4E+2	5.0E+0	2.9E+0
F 22	6.0	2980	7.4E+2	2.6E+1	2.6E+0	0.0	7.7E+2	4.0E+1	7.9E+0	5.6E+0
F 30	6.8	2690	5.2E+2	2.5E+1	4.2E-1	0.0	5.4E+2	3.0E+1	4.2E+0	2.6E+0
G 15	8.7	3230	1.6E+3	4.3E+1	3.0E+0	0.0	1.7E+3	8.0E+1	1.5E+1	9.8E+0
G 20	9.2	2320	6.6E+2	6.3E+1	3.3E+0	0.0	7.3E+2	5.9E+1	8.4E+0	6.2E+0
H 11	9.4	1960	3.3E+2	1.0E+1	1.8E+0	0.0	3.5E+2	1.8E+1	4.2E+0	6.9E+0
I 09	5.9	2700	6.6E+2	1.9E+1	3.6E+1	0.0	7.2E+2	6.7E+1	4.0E+1	4.6E+1
I 18	7.8	1670	3.9E+2	2.8E+1	6.7E+0	2.5E+0	4.3E+2	3.7E+1	1.2E+1	1.6E+1
J 15	7.9	1550	6.6E+1	2.9E+1	3.3E+0	2.1E+0	1.0E+2	1.0E+2	6.1E+0	6.8E+0
J 16	8.9	2570	8.3E+0	1.4E+1	1.1E+1	2.2E+0	3.6E+1	3.6E+1	1.4E+1	1.4E+1
K 18	9.8	1260	3.7E+1	0.0	2.8E+0	1.4E+1	5.4E+1	1.8E+1	1.7E+1	1.8E+1
AVERAGES										
SPREADER, NO REINJ FROM D.C.			7.6E+2	1.1E+2	2.3E+0	0.0	8.7E+2	8.6E+1	8.4E+0	5.8E+0
MASS FIRED OVERFEED			2.4E+2	1.9E+1	8.8E+0	3.0E+0	2.7E+2	4.3E+1	1.4E+1	1.6E+1
HIGH			1.6E+3	2.7E+2	3.6E+1	1.4E+1	1.7E+3	1.7E+2	4.0E+1	4.6E+1
LOW			8.3E+0	1.0E+1	5.3E-2	2.1E+0	3.6E+1	1.8E+1	1.3E+0	2.6E+0

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

NIOBIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - EMISSIONS - µG/DRY SCM* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	4.8E+0	1.0E+0	2.4E+0	2.8E+0	1.1E+1	6.3E+0	5.2E+0	5.2E+0
B 31	6.0	2670	2.9E+1	2.2E+0	2.4E+0	2.9E+0	3.7E+1	9.5E+0	5.5E+0	5.4E+0
B 33	6.1	2130	1.8E+1	2.1E+0	6.3E+0	3.0E+0	2.9E+1	1.2E+1	9.4E+0	9.3E+0
C 44	6.9	4380	2.9E+2	8.0E+0	1.0E+0	0.0	3.0E+2	3.3E+1	3.1E+0	1.5E+0
C 45	6.3	4360	2.7E+2	6.7E+0	2.0E-1	0.0	2.8E+2	2.9E+1	2.1E+0	6.2E-1
C 46	9.0	3230	5.8E+1	8.1E+0	1.0E+0	0.0	6.8E+1	1.2E+1	1.5E+0	1.1E+0
AVERAGE			1.1E+2	4.7E+0	2.2E+0	1.5E+0	1.2E+2	1.7E+1	4.5E+0	3.8E+0
HIGH			2.9E+2	8.1E+0	6.3E+0	3.0E+0	3.0E+2	3.3E+1	9.4E+0	9.3E+0
LOW			4.8E+0	1.0E+0	2.0E-1	2.8E+0	1.1E+1	6.3E+0	1.5E+0	6.2E-1

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - EMISSIONS - µG/DRY SCM* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	1.5E+1	1.3E+0	0.0	0.0	1.6E+1	1.2E+0	1.2E-1	2.9E-1
E 16	8.3	2760	1.5E+1	1.8E+1	4.6E+0	0.0	3.8E+1	1.5E+1	4.8E+0	4.7E+0
E 17	6.2	2770	1.5E+1	1.5E+1	2.7E-2	0.0	2.9E+1	8.5E+0	2.3E-1	1.4E-1
F 22	6.0	2980	4.9E+1	1.7E+0	6.9E+0	0.0	5.8E+1	9.4E+0	7.2E+0	7.1E+0
F 30	6.8	2890	3.4E+1	1.6E+0	1.4E+0	0.0	3.7E+1	3.4E+0	1.7E+0	1.5E+0
G 15	8.7	3230	4.9E+1	2.9E+0	5.3E+0	0.0	5.8E+1	8.5E+0	5.7E+0	5.5E+0
G 20	9.2	2320	6.6E+1	3.8E+0	1.6E+1	0.0	8.6E+1	2.1E+1	1.7E+1	1.7E+1
H 11	9.4	1980	6.7E+0	3.1E-1	1.8E+0	0.0	8.7E+0	2.1E+0	1.8E+0	1.9E+0
I 09	5.9	2700	3.3E+1	1.9E+0	1.2E+2	0.0	1.5E+2	1.2E+2	1.2E+2	1.2E+2
I 18	7.8	1670	3.9E+1	1.4E+0	6.7E+0	8.4E-1	4.8E+1	9.5E+0	7.8E+0	8.1E+0
J 15	7.9	1550	1.7E+0	1.5E+0	5.5E+0	7.0E-1	9.3E+0	9.3E+0	6.2E+0	6.3E+0
J 16	8.9	2570	1.3E+0	1.4E+0	1.1E+1	7.2E-1	1.5E+1	1.5E+1	1.2E+1	1.2E+1
K 18	9.8	1280	2.5E+0	0.0	1.1E+0	5.7E+0	9.3E+0	6.9E+0	6.9E+0	6.9E+0
AVERAGES										
SPREADER, NO REINJ FROM D.C.			3.8E+1	7.1E+0	5.8E+0	0.0	5.1E+1	1.1E+1	6.1E+0	5.9E+0
MASS FIRED OVERFEED			1.4E+1	1.1E+0	2.1E+1	1.1E+0	3.7E+1	2.4E+1	2.2E+1	2.2E+1
HIGH			6.6E+1	1.8E+1	1.2E+2	5.7E+0	1.5E+2	1.2E+2	1.2E+2	1.2E+2
LOW			1.3E+0	3.1E-1	2.7E-2	7.0E-1	8.7E+0	1.2E+0	1.2E-1	1.4E-1

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

MOLYBDENUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210					1.0E+1			
A 35	6.0	3140					1.2E+1			
B 30	6.0	2710	2.9E+0	4.1E+1	5.5E+2	1.4E+1	6.1E+2	6.0E+2	5.7E+2	5.7E+2
B 31	6.0	2670	1.9E+1	2.6E+1	5.6E+2	1.5E+1	6.2E+2	6.0E+2	5.8E+2	5.8E+2
B 33	6.1	2130	8.8E+0	2.5E+1	1.6E+3	1.5E+1	1.6E+3	1.6E+3	1.6E+3	1.6E+3
C 44	6.9	4380	4.4E+2	1.1E+2	2.5E+2	0.0	8.0E+2	3.7E+2	2.6E+2	2.5E+2
C 45	6.3	4360	4.1E+2	6.1E+1	1.0E+2	0.0	5.7E+2	1.8E+2	1.0E+2	1.0E+2
C 46	9.0	3230	8.2E+1	3.6E+1	1.5E+2	0.0	2.7E+2	1.9E+2	1.5E+2	1.5E+2
AVERAGE			1.2E+2	3.7E+1	4.8E+2	5.5E+0	5.6E+2	4.5E+2	4.1E+2	4.1E+2
HIGH			4.4E+2	1.1E+2	1.6E+3	1.5E+1	1.6E+3	1.6E+3	1.6E+3	1.6E+3
LOW			2.9E+0	2.5E+1	1.0E+2	1.4E+1	1.0E+1	1.0E+1	1.0E+1	1.0E+1

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	13.2	2070	1.5E+1	1.2E+2	0.0	0.0	1.3E+2	6.6E+1	9.4E-1	2.0E+0
E 16	8.3	2760	2.3E+1	9.1E+1	4.6E+1	0.0	1.6E+2	9.7E+1	4.7E+1	4.6E+1
E 17	6.2	2770	7.3E+0	2.2E+1	1.6E+1	0.0	4.5E+1	2.8E+1	1.6E+1	1.6E+1
F 22	6.0	2980	7.4E+1	2.6E+1	8.6E+1	0.0	1.9E+2	1.0E+2	8.7E+1	8.6E+1
F 30	6.8	2890	5.7E+1	2.5E+1	7.0E+1	0.0	1.3E+2	8.5E+1	7.0E+1	7.0E+1
G 15	8.7	3230	1.3E+1	4.3E+0	2.3E+2	0.0	2.5E+2	2.3E+2	2.3E+2	2.3E+2
G 20	9.2	2320	1.1E+1	1.3E+1	2.5E+2	0.0	2.7E+2	2.5E+2	2.5E+2	2.5E+2
H 11	9.4	1980	3.3E+1	3.1E+1	2.3E+2	0.0	3.0E+2	2.5E+2	2.3E+2	2.3E+2
I 09	5.9	2700	1.3E+2	4.7E+1	6.0E+2	0.0	7.7E+2	6.3E+2	6.0E+2	6.0E+2
I 18	7.8	1670	2.4E+1	8.3E+1	6.7E+2	4.2E+1	8.2E+2	7.6E+2	7.1E+2	7.1E+2
J 15	7.9	1550	1.0E+0	2.2E+1	3.3E+2	3.5E+1	3.9E+2	3.9E+2	3.7E+2	3.7E+2
J 16	8.9	2570	5.0E-1	7.1E+1	2.9E+2	3.6E+1	3.9E+2	3.9E+2	3.2E+2	3.2E+2
K 18	9.8	1280	3.7E+0	0.0	5.1E+2	1.4E+1	5.3E+2	5.2E+2	5.2E+2	5.2E+2
AVERAGES										
SPREADER, NO REINJ FROM D.C.			3.1E+1	3.0E+1	1.2E+2	0.0	1.8E+2	1.3E+2	1.2E+2	1.2E+2
MASS FIRED OVERFEED			3.0E+1	5.3E+1	3.7E+2	1.8E+1	4.8E+2	4.3E+2	3.9E+2	3.9E+2
HIGH			1.3E+2	1.2E+2	6.7E+2	4.2E+1	8.2E+2	7.6E+2	7.1E+2	7.1E+2
LOW			5.0E-1	4.3E+0	1.6E+1	1.4E+1	4.5E+1	2.8E+1	9.4E-1	2.0E+0

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

RUTHENIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	2.9E+0	1.9E-1	3.1E-1	5.6E+0	9.0E+0	6.3E+0	5.9E+0	5.9E+0
B 31	6.0	2670	2.9E+0	1.8E-1	3.3E-1	5.8E+0	9.2E+0	6.5E+0	6.2E+0	6.2E+0
B 33	6.1	2130	2.7E+0	2.8E-1	3.2E-1	6.0E+0	9.3E+0	6.8E+0	6.4E+0	6.4E+0
C 44	8.9	4380	4.4E+0	1.1E-1	1.0E-1	0.0	4.6E+0	5.7E-1	1.3E-1	1.1E-1
C 45	8.3	4360	4.1E+0	9.0E-2	1.0E-1	0.0	4.3E+0	5.3E-1	1.3E-1	1.1E-1
C 46	9.0	3230	3.5E+0	1.2E-1	1.0E-1	0.0	3.7E+0	5.0E-1	1.3E-1	1.1E-1
AVERAGE			3.4E+0	1.6E-1	2.1E-1	2.9E+0	6.7E+0	3.5E+0	3.1E+0	3.1E+0
HIGH			4.4E+0	2.8E-1	3.3E-1	6.0E+0	9.3E+0	6.8E+0	6.4E+0	6.4E+0
LOW			2.7E+0	9.0E-2	1.0E-1	5.6E+0	3.7E+0	5.0E-1	1.3E-1	1.1E-1

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 10.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	3.0E-1	2.9E-1	0.0	0.0	6.0E-1	1.7E-1	4.2E-3	8.9E-3
E 16	8.3	2760	7.6E-1	2.7E-1	2.3E-1	0.0	1.3E+0	4.1E-1	2.4E-1	2.3E-1
E 17	6.2	2770	2.2E+0	2.2E-1	1.6E-1	0.0	2.6E+0	3.5E-1	1.8E-1	1.7E-1
F 22	6.0	2980	2.5E+0	2.6E-1	6.9E-1	0.0	3.4E+0	9.1E-1	7.1E-1	7.0E-1
F 30	6.8	2690	1.7E+0	2.5E-1	7.0E-1	0.0	2.7E+0	8.9E-1	7.1E-1	7.1E-1
G 15	8.7	3230	1.5E+0	1.3E-1	1.5E+0	0.0	3.1E+0	1.6E+0	1.5E+0	1.5E+0
G 20	9.2	2320	1.1E+0	6.3E-2	1.7E+0	0.0	2.8E+0	1.7E+0	1.7E+0	1.7E+0
H 11	9.4	1980	3.3E-1	1.5E-2	1.2E+0	0.0	1.5E+0	1.2E+0	1.2E+0	1.2E+0
I 09	5.9	2700	3.3E-1	4.7E-2	6.0E+1	0.0	6.0E+1	6.0E+1	6.0E+1	6.0E+1
I 18	7.6	1670	7.1E-1	8.3E-2	4.7E+0	5.1E+0	1.1E+1	9.8E+0	9.7E+0	9.7E+0
J 15	7.9	1550	3.0E-2	3.6E-2	3.3E+0	4.2E+0	7.6E+0	7.6E+0	7.5E+0	7.5E+0
J 16	8.9	2570	1.5E-2	6.4E-2	5.2E+0	4.3E+0	9.6E+0	9.6E+0	9.5E+0	9.5E+0
K 18	9.8	1280	2.5E-1	0.0	5.7E+0	2.9E+1	3.4E+1	3.4E+1	3.4E+1	3.4E+1
AVERAGES										
SPREADER, NO REINJ FROM D.C.			1.6E+0	2.0E-1	8.3E-1	0.0	2.6E+0	1.8E+0	8.4E-1	8.3E-1
MASS FIRED OVERFEED			2.8E-1	7.7E-2	1.1E+1	6.8E+0	1.8E+1	1.7E+1	1.7E+1	1.7E+1
HIGH			2.5E+0	2.9E-1	6.0E+1	2.9E+1	6.0E+1	6.0E+1	6.0E+1	6.0E+1
LOW			1.5E-2	1.5E-2	1.6E-1	4.2E+0	6.0E-1	1.7E-1	4.2E-3	8.9E-3

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

µG/DRY SCM

RHODIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.6	2710	4.8E-1	2.7E-1	7.8E-2	1.4E+0	2.2E+0	1.7E+0	1.5E+0	1.5E+0
B 31	6.0	2670	4.9E-1	1.8E-1	8.2E-2	1.5E+0	2.2E+0	1.7E+0	1.5E+0	1.5E+0
B 33	6.1	2130	4.4E-1	1.5E-1	8.0E-2	1.5E+0	2.2E+0	1.7E+0	1.6E+0	1.6E+0
C 44	8.9	4340	4.4E+0	6.1E-2	5.0E-2	0.0	4.5E+0	4.8E-1	5.2E-2	5.7E-2
C 45	8.3	4360	1.4E+0	6.5E-2	5.1E-2	0.0	1.5E+0	2.2E-1	6.1E-2	5.3E-2
C 46	9.0	3230	1.2E+0	7.3E-2	2.5E-2	1.3E+0	2.5E+0	1.5E+0	1.3E+0	1.3E+0
AVERAGE			1.4E+0	1.3E-1	6.1E-2	9.4E-1	2.5E+0	1.2E+0	1.0E+0	1.0E+0
HIGH			4.4E+0	2.7E-1	8.2E-2	1.5E+0	4.5E+0	1.7E+0	1.6E+0	1.6E+0
LOW			4.4E-1	6.1E-2	2.5E-2	1.3E+0	1.5E+0	2.2E-1	6.1E-2	5.3E-2

• STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR •

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 10.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2670	1.1E-1	2.6E-1	0.0	0.0	3.6E-1	1.5E-1	2.6E-3	5.5E-3
E 16	8.3	2760	5.1E-1	6.1E-2	9.2E-2	0.0	6.6E-1	1.4E-1	1.0E-1	9.4E-2
E 17	6.2	2770	4.9E-1	4.9E-2	1.1E-1	0.0	6.4E-1	1.5E-1	1.1E-1	1.1E-1
F 22	6.0	2580	1.6E+0	5.8E-2	3.4E-1	0.0	2.0E+0	4.3E-1	3.6E-1	3.5E-1
F 30	6.8	2640	1.1E+0	5.5E-2	2.8E-1	0.0	1.5E+0	3.5E-1	2.9E-1	2.8E-1
G 15	8.7	3230	3.3E-1	5.8E-2	1.5E+0	0.0	1.9E+0	1.6E+0	1.5E+0	1.5E+0
G 20	9.2	2320	4.4E-1	2.5E-2	1.6E+0	0.0	2.1E+0	1.7E+0	1.6E+0	1.6E+0
H 11	9.4	1980	3.3E-1	1.5E-2	4.7E-1	0.0	8.2E-1	4.9E-1	4.7E-1	4.7E-1
I 09	5.9	2700	3.3E-1	8.5E-2	2.4E+1	0.0	2.4E+1	2.4E+1	2.4E+1	2.4E+1
I 18	7.8	1670	3.9E-1	1.4E-1	2.7E+0	2.5E+0	5.7E+0	5.3E+0	5.2E+0	5.2E+0
J 15	7.9	1550	3.8E-2	6.5E-2	1.7E+0	2.1E+0	3.8E+0	3.8E+0	3.7E+0	3.7E+0
J 16	8.9	2570	1.5E-2	6.4E-2	2.9E+0	2.2E+0	5.1E+0	5.1E+0	5.0E+0	5.0E+0
K 18	9.8	1240	1.2E-1	0.0	1.7E+0	1.4E+1	1.6E+1	1.6E+1	1.6E+1	1.6E+1
AVERAGES										
SPREADER, NO REINJ FROM D.C.			7.6E-1	5.1E-2	6.6E-1	0.0	1.5E+0	7.2E-1	6.7E-1	6.7E-1
MASS FIRED OVERFEED			1.9E-1	9.0E-2	4.7E+0	3.0E+0	8.0E+0	7.8E+0	7.7E+0	7.8E+0
HIGH			1.6E+0	2.6E-1	2.4E+1	1.4E+1	2.4E+1	2.4E+1	2.4E+1	2.4E+1
LOW			1.5E-2	1.5E-2	9.2E-2	2.1E+0	3.6E-1	1.4E-1	2.6E-3	5.5E-3

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

µG/DRY SCM

PALADIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 38	6.0	2710	1.9E+0	1.7E-1	7.8E-1	5.6E+0	8.5E+0	6.7E+0	6.4E+0	6.4E+0
d 31	6.0	2670	1.9E+0	1.6E-1	8.2E-1	5.8E+0	8.7E+0	6.9E+0	6.7E+0	6.6E+0
B 33	6.1	2130	3.5E+0	2.5E-1	8.0E-1	6.8E+0	1.1E+1	7.3E+0	6.9E+0	6.8E+0
C 44	8.9	4380	1.0E+1	1.7E-1	1.0E-1	0.0	1.0E+1	1.1E+0	1.7E-1	1.2E-1
C 45	8.3	4360	9.5E+0	1.6E-1	1.0E-1	0.0	9.7E+0	1.1E+0	1.7E-1	1.2E-1
C 46	9.8	3230	8.2E+0	1.7E-1	5.1E-2	0.0	8.4E+0	9.0E-1	1.1E-1	6.3E-2
AVERAGE			5.9E+0	1.8E-1	4.4E-1	2.9E+0	9.4E+0	4.0E+0	3.4E+0	3.4E+0
HIGH			1.0E+1	2.5E-1	8.2E-1	6.8E+0	1.1E+1	7.3E+0	6.9E+0	6.8E+0
LOW			1.9E+0	1.6E-1	5.1E-2	5.6E+0	8.4E+0	9.0E-1	1.1E-1	6.3E-2

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	7.6E-1	3.5E-1	0.0	0.0	1.1E+0	2.2E-1	7.8E-3	1.7E-2
E 16	4.3	2760	1.5E+0	1.8E-1	4.1E-1	0.0	2.1E+0	5.6E-1	4.3E-1	4.2E-1
E 17	4.2	2770	1.5E+0	2.2E-1	1.6E-1	0.0	1.8E+0	3.3E-1	1.7E-1	1.7E-1
F 22	6.0	2980	4.9E+0	1.7E-1	1.7E+0	0.0	6.8E+0	2.0E+0	1.8E+0	1.7E+0
F 38	6.8	2690	3.4E+0	1.6E-1	7.9E-1	0.0	4.3E+0	9.0E-1	7.2E-1	7.1E-1
G 15	8.7	3230	8.2E-1	2.9E-1	1.5E+0	0.0	2.6E+0	1.7E+0	1.5E+0	1.5E+0
G 20	9.2	2320	2.0E+0	1.1E-1	1.6E+0	0.0	3.7E+0	1.8E+0	1.6E+0	1.6E+0
H 11	9.4	1960	6.7E-1	1.8E-1	1.8E+0	0.0	2.5E+0	1.8E+0	1.8E+0	1.8E+0
I 09	5.9	2700	1.3E+0	4.7E-2	6.0E+1	0.0	6.1E+1	6.0E+1	6.0E+1	6.0E+1
I 18	7.8	1670	1.6E+0	4.3E-2	6.7E+0	5.1E+0	1.3E+1	1.2E+1	1.2E+1	1.2E+1
J 15	7.9	1550	1.3E-1	2.9E-1	5.5E+0	4.2E+0	1.0E+1	1.0E+1	9.7E+0	9.7E+0
J 16	8.9	2570	8.3E-2	3.5E-1	1.1E+1	4.3E+0	1.6E+1	1.6E+1	1.6E+1	1.6E+1
K 18	9.8	1280	3.7E-1	0.0	5.7E+0	2.9E+1	3.5E+1	3.4E+1	3.4E+1	3.4E+1
AVERAGES										
SPREADER,NO REINJ FROM D.C.			2.4E+0	1.9E-1	1.0E+0	0.0	3.6E+0	1.2E+0	1.0E+0	1.0E+0
MASS FIRED OVERFEED			7.0E-1	1.8E-1	1.3E+1	6.0E+0	2.0E+1	1.9E+1	1.9E+1	1.9E+1
HIGH			4.3E+0	3.5E-1	6.0E+1	2.9E+1	6.1E+1	6.0E+1	6.0E+1	6.0E+1
LOW			8.3E-2	4.7E-2	1.6E-1	4.2E+0	1.1E+0	2.2E-1	7.8E-3	1.7E-2

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

SILVER

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - UG/DRY SCM* 10 UM + 3 UM CYCLONE	1 UM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 33	6.0	2710	1.8E+0	3.0E+0	1.6E+2	2.8E+0	1.6E+2	1.6E+2	1.6E+2	1.6E+2
B 31	6.0	2670	1.8E+0	3.3E+0	6.4E+1	2.9E+0	7.2E+1	7.0E+1	6.7E+1	6.7E+1
B 33	6.1	2130	3.5E+0	2.4E+1	7.9E+1	3.0E+0	1.1E+2	1.0E+2	8.2E+1	8.2E+1
C 44	6.9	4380	5.8E+0	3.1E+0	1.5E+2	6.4E-1	1.6E+2	1.5E+2	1.5E+2	1.5E+2
C 45	6.3	4360	2.7E+0	2.6E+0	2.0E+1	6.4E-1	2.6E+1	2.3E+1	2.1E+1	2.1E+1
C 46	9.0	3230	4.7E+3	3.5E+2	1.0E+2	6.4E-1	5.1E+3	7.6E+2	1.4E+2	1.1E+2
AVERAGE			7.8E+2	6.5E+1	9.6E+1	1.8E+0	9.4E+2	2.1E+2	1.0E+2	9.9E+1
HIGH			4.7E+3	3.5E+2	1.6E+2	3.0E+0	5.1E+3	7.6E+2	1.6E+2	1.6E+2
LOW			1.8E+0	2.6E+0	2.0E+1	6.4E-1	2.6E+1	2.3E+1	2.1E+1	2.1E+1

• STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR •

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - UG/DRY SCM* 18.5 UM +5.9 UM CYCLONE	1.4 UM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	13.2	2070	7.6E-1	1.8E+0	0.0	0.0	2.6E+0	1.0E+0	1.8E-2	3.9E-2
E 16	8.3	2760	2.5E-1	9.1E-1	1.4E-1	0.0	1.3E+0	6.5E-1	1.5E-1	1.4E-1
E 17	6.2	2770	4.9E-1	2.4E-1	2.1E-1	0.0	9.5E-1	1.6E-1	2.2E-1	2.2E-1
F 22	6.0	2980	8.2E-1	2.6E+0	8.6E-1	0.0	4.3E+0	2.3E+0	8.8E-1	8.7E-1
F 30	6.8	2840	5.7E-1	2.7E-2	2.8E-1	0.0	8.8E-1	3.1E-1	2.8E-1	2.8E-1
G 15	8.7	3230	3.3E+0	2.9E+0	1.5E+0	0.0	7.7E+0	3.2E+0	1.6E+0	1.5E+0
G 20	9.2	2320	1.8E+0	6.3E-1	4.9E+2	0.0	4.9E+2	4.9E+2	4.9E+2	4.9E+2
H 11	9.4	1980	3.3E+0	5.1E-1	2.9E+0	0.0	6.8E+0	3.3E+0	2.9E+0	3.0E+0
I 09	5.9	2700	1.3E+1	4.7E+0	1.8E+2	0.0	2.0E+2	1.8E+2	1.8E+2	1.8E+2
I 16	7.6	1670	3.9E-1	5.6E+0	4.0E+0	1.7E+3	1.2E+1	8.8E+0	5.7E+0	5.8E+0
J 15	7.9	1550	6.6E-1	3.6E+0	5.5E+0	5.6E-1	1.0E+1	1.0E+1	6.1E+0	6.1E+0
J 16	8.9	2570	5.0E-1	5.7E+0	1.1E+1	5.8E+0	2.3E+1	2.3E+1	1.7E+1	1.7E+1
K 18	9.8	1280	2.5E-1	0.0	5.7E-1	7.1E+1	7.2E+1	7.2E+1	7.2E+1	7.2E+1
AVERAGES										
SPREADR,NO REINJ FROM D.C.			1.2E+0	1.2E+0	8.2E+1	0.0	8.5E+1	5.3E+1	8.2E+1	8.2E+1
MASS FIRED OVERFEED			2.7E+0	3.1E+0	2.9E+1	1.1E+1	4.6E+1	4.3E+1	4.0E+1	4.0E+1
HIGH			1.3E+1	5.7E+0	4.9E+2	7.1E+1	4.9E+2	4.9E+2	4.9E+2	4.9E+2
LOW			2.5E-1	2.7E-2	1.4E-1	5.6E-1	8.8E-1	3.1E-1	1.8E-2	3.9E-2

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

CADMIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS - UG/DRY SCM* 10 UM + 3 UM CYCLONE	1 UM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP - MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210					4.9E+0			
A 35	6.0	3140					6.6E+0			
B 30	5.0	2710	1.9E+0	8.6E-1	2.4E+0	1.4E+1	1.9E+1	1.7E+1	1.6E+1	1.6E+1
B 31	6.0	2670	5.8E+0	2.5E+0	2.4E+0	1.5E+1	2.5E+1	1.9E+1	1.7E+1	1.7E+1
B 33	6.1	2130	8.8E+0	1.4E+0	2.3E+0	1.5E+1	2.8E+1	1.9E+1	1.7E+1	1.7E+1
C 44	6.9	4380	1.5E+1	3.5E+0	2.5E+0	0.0	2.1E+1	6.4E+0	2.6E+0	2.5E+0
C 45	6.3	4360	1.4E+0	2.7E+0	6.1E-1	0.0	4.7E+0	2.8E+0	6.4E-1	6.2E-1
C 46	9.0	3230	2.3E+1	4.2E+0	5.1E+0	0.0	3.3E+1	1.0E+1	5.3E+0	5.1E+0
AVERAGE			7.0E+0	1.9E+0	1.9E+0	5.5E+0	1.8E+1	1.1E+1	8.9E+0	8.8E+0
HIGH			2.3E+1	4.2E+0	5.1E+0	1.5E+1	3.3E+1	1.9E+1	1.7E+1	1.7E+1
LOW			1.4E+0	8.6E-1	6.1E-1	1.4E+1	4.7E+0	2.8E+0	6.4E-1	6.2E-1

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS - UG/DRY SCM* 18.5 UM +5.9 UM CYCLONE	1.4 UM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP - MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	13.2	2070	1.5E+0	2.9E+1	0.0	0.0	3.1E+1	1.6E+1	2.2E-1	4.6E-1
E 16	8.3	2760	7.6E+0	9.1E-1	1.4E+0	0.0	9.9E+0	2.1E+0	1.4E+0	1.4E+0
E 17	6.2	2770	7.3E+0	7.3E-1	4.3E-1	0.0	8.5E+0	1.1E+0	4.8E-1	4.6E-1
F 22	6.6	2930	2.5E+1	8.6E-1	4.3E+0	0.0	3.0E+1	5.6E+0	4.5E+0	4.4E+0
F 30	6.8	2830	1.7E+1	8.2E-2	4.9E+0	0.0	2.2E+1	5.5E+0	5.0E+0	5.0E+0
G 15	8.7	3230	8.2E+0	7.2E-1	1.5E+1	0.0	2.4E+1	1.6E+1	1.5E+1	1.5E+1
G 20	9.2	2320	1.1E+1	6.3E-1	4.9E+1	0.0	6.1E+1	5.0E+1	4.9E+1	4.9E+1
H 11	9.4	1980	5.6E+0	2.6E-1	5.3E+0	0.0	1.1E+1	5.6E+0	5.3E+0	5.3E+0
I 09	5.9	2730	3.3E+0	1.9E+0	3.6E+2	0.0	3.6E+2	3.6E+2	3.6E+2	3.6E+2
I 18	7.8	1670	3.9E+0	2.8E+0	4.0E+1	1.7E+1	6.4E+1	5.9E+1	5.7E+1	5.7E+1
J 15	7.9	1550	6.6E-1	2.2E+0	2.8E+1	1.4E+1	4.4E+1	4.4E+1	4.2E+1	4.2E+1
J 16	8.9	2570	3.3E-1	2.1E+0	4.6E+1	1.4E+1	6.3E+1	6.3E+1	6.0E+1	6.0E+1
K 18	9.8	1240	1.2E+0	0.0	1.7E+1	7.1E+1	9.0E+1	8.8E+1	8.8E+1	8.8E+1
AVERAGES										
SPREADER,NO REINJ FROM D.C.			1.3E+1	6.6E-1	1.3E+1	0.0	2.6E+1	1.3E+1	1.3E+1	1.3E+1
MASS FIRED OVERFEED			2.4E+0	5.5E+0	7.0E+1	1.7E+1	9.5E+1	9.1E+1	8.7E+1	8.7E+1
HIGH			2.5E+1	2.9E+1	3.6E+2	7.1E+1	3.6E+2	3.6E+2	3.6E+2	3.6E+2
LOW			3.3E-1	8.2E-2	4.3E-1	1.4E+1	8.5E+0	1.1E+0	2.2E-1	4.6E-1

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

INDIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	1.9E+0	8.6E-1	1.6E-1	2.8E+0	5.7E+0	3.8E+0	3.0E+0	3.0E+0
B 31	6.0	2670	3.9E+0	4.2E-1	1.6E-1	2.9E+0	7.4E+0	3.7E+0	3.1E+0	3.1E+0
B 33	6.1	2130	1.8E+0	3.9E-1	8.0E-2	4.2E+2	4.2E+2	4.2E+2	4.2E+2	4.2E+2
C 44	8.9	4380	2.9E+0	7.6E-1	2.5E-2	0.0	3.7E+0	8.5E-1	5.1E-2	3.1E-2
C 45	8.3	4360	1.4E+0	6.0E-1	2.5E-2	0.0	2.0E+0	6.0E-1	3.9E-2	2.8E-2
C 46	9.0	3230	1.2E+0	6.3E-1	2.5E-2	0.0	1.8E+0	6.0E-1	3.8E-2	2.8E-2
AVERAGE			2.2E+0	6.1E-1	7.9E-2	7.1E+1	7.4E+1	7.2E+1	7.1E+1	7.1E+1
HIGH			3.9E+0	8.6E-1	1.6E-1	4.2E+2	4.2E+2	4.2E+2	4.2E+2	4.2E+2
LOW			1.2E+0	3.9E-1	2.5E-2	2.8E+0	1.8E+0	6.0E-1	3.8E-2	2.8E-2

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	3.0E-1	2.3E+0	0.0	0.0	2.6E+0	1.3E+0	1.9E-2	4.0E-2
E 16	6.3	2760	5.1E-1	1.8E-1	9.2E-2	0.0	7.8E-1	2.1E-1	1.0E-1	9.5E-2
E 17	6.2	2770	4.9E-1	1.5E-1	1.6E+0	0.0	2.2E+0	1.7E+0	1.6E+0	1.6E+0
F 22	6.0	2980	2.5E+0	2.9E-1	3.4E+0	0.0	6.2E+0	3.7E+0	3.5E+0	3.4E+0
F 30	6.8	2890	4.6E-1	5.5E-2	4.2E-1	0.0	9.3E-1	4.6E-1	4.2E-1	4.2E-1
G 15	8.7	3230	1.0E+0	8.7E-1	7.6E-1	0.0	2.6E+0	1.3E+0	7.7E-1	7.7E-1
G 20	9.2	2320	8.8E-1	5.0E-1	1.6E+0	0.0	3.0E+0	1.9E+0	1.6E+0	1.6E+0
H 11	9.4	1980	5.6E-1	4.1E-2	1.2E+0	0.0	1.8E+0	1.2E+0	1.2E+0	1.2E+0
I 09	5.9	2700	5.3E-1	7.6E-1	6.0E+1	0.0	6.1E+1	6.0E+1	6.0E+1	6.0E+1
I 18	7.8	1670	1.6E-1	1.4E+0	2.0E+0	1.7E+1	2.0E+1	2.0E+1	1.9E+1	1.9E+1
J 15	7.9	1550	1.7E-2	1.5E+0	1.7E+0	5.6E-1	3.7E+0	3.7E+0	2.2E+0	2.2E+0
J 16	8.9	2570	5.0E-3	1.4E+0	2.9E+0	5.8E-1	4.9E+0	4.9E+0	3.5E+0	3.5E+0
K 18	9.8	1280	6.2E-2	0.0	1.1E+0	4.3E+0	5.5E+0	5.4E+0	5.4E+0	5.4E+0
AVERAGES										
SPREADER, NO REINJ FROM D.C.			1.0E+0	3.4E-1	1.3E+0	0.0	2.6E+0	1.5E+0	1.3E+0	1.3E+0
MASS FIRED OVERFEED			2.3E-1	1.1E+0	9.8E+0	3.2E+0	1.4E+1	1.4E+1	1.3E+1	1.3E+1
HIGH			2.5E+0	2.3E+0	6.0E+1	1.7E+1	6.1E+1	6.0E+1	6.0E+1	6.0E+1
LOW			5.0E-3	4.1E-2	9.2E-2	5.6E-1	7.8E-1	2.1E-1	1.9E-2	4.0E-2

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

TIN

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - UG/DRY SCM* 10 UM + 3 UM CYCLONE	1 UM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210					2.2E+0			
A 35	6.0	3140					1.7E+0			
B 30	6.0	2710	9.6E+0	6.7E+1	2.4E+1	5.6E+0	1.1E+2	8.0E+1	3.0E+1	2.9E+1
B 31	6.0	2670	1.9E+0	4.1E+1	2.4E+1	5.8E+0	7.3E+1	6.1E+1	3.0E+1	3.0E+1
B 33	6.1	2130	8.8E+0	6.1E+1	3.9E+1	6.0E+0	1.2E+2	9.2E+1	4.6E+1	4.6E+1
C 44	8.9	4380	2.9E+1	2.4E+1	5.0E+0	0.0	5.9E+1	2.6E+1	5.4E+0	5.1E+0
C 45	8.3	4360	2.7E+1	2.0E+1	5.1E+0	0.0	5.2E+1	2.2E+1	5.4E+0	5.2E+0
C 46	9.0	3230	2.3E+1	1.2E+1	3.0E+0	0.0	3.8E+1	1.4E+1	3.3E+0	3.1E+0
AVERAGE			1.3E+1	2.8E+1	1.3E+1	2.2E+0	5.6E+1	3.7E+1	1.6E+1	1.5E+1
HIGH			2.9E+1	6.7E+1	3.9E+1	6.0E+0	1.2E+2	9.2E+1	4.6E+1	4.6E+1
LOW			1.9E+0	1.2E+1	3.0E+0	5.6E+0	1.7E+0	1.7E+0	1.7E+0	1.7E+0

• STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR •

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - UG/DRY SCM* 18.5 UM +5.9 UM CYCLONE	1.4 UM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	6.1E+0	1.7E+2	0.0	0.0	1.8E+2	9.6E+1	1.3E+0	2.7E+0
E 16	8.3	2760	7.6E+0	1.8E+1	4.1E-1	0.0	2.6E+1	1.1E+1	6.0E-1	5.2E-1
E 17	6.2	2770	7.3E+0	1.5E+1	1.6E+0	0.0	2.4E+1	9.9E+0	1.8E+0	1.7E+0
F 22	6.0	2980	4.9E+0	8.6E+0	1.7E+1	0.0	3.1E+1	2.2E+1	1.7E+1	1.7E+1
F 30	6.8	2690	3.4E+0	9.2E+0	4.2E+0	0.0	1.6E+1	8.8E+0	4.3E+0	4.2E+0
G 15	8.7	3230	1.3E+1	4.3E+1	3.0E+1	0.0	8.7E+1	5.5E+1	3.1E+1	3.1E+1
G 20	9.2	2320	6.6E+0	1.0E+1	4.9E+1	0.0	6.6E+1	5.5E+1	4.9E+1	4.9E+1
H 11	9.4	1980	3.3E+1	4.6E+0	1.8E+1	0.0	5.6E+1	2.1E+1	1.8E+1	1.8E+1
I 09	5.9	2700	2.8E+1	2.8E+1	1.2E+2	0.0	1.7E+2	1.4E+2	1.2E+2	1.2E+2
I 10	7.8	1670	6.3E+0	5.6E+1	4.7E+1	8.4E+0	1.2E+2	8.6E+1	5.6E+1	5.6E+1
J 15	7.9	1550	1.0E+0	2.2E+1	3.3E+1	4.2E+0	6.0E+1	6.0E+1	3.7E+1	3.8E+1
J 16	8.9	2570	1.3E-1	2.1E+1	2.9E+1	4.3E+0	5.4E+1	5.4E+1	3.3E+1	3.3E+1
K 18	9.8	1280	1.2E+0	0.0	5.7E+0	2.9E+1	3.5E+1	3.4E+1	3.4E+1	3.4E+1
AVERAGES										
SPREADER,NO REINJ FROM D.C.			7.2E+0	1.7E+1	1.7E+1	0.0	4.2E+1	2.7E+1	1.7E+1	1.7E+1
MASS FIRED OVERFEED			9.7E+0	4.4E+1	3.6E+1	6.5E+0	9.6E+1	7.0E+1	4.3E+1	4.3E+1
HIGH			3.3E+1	1.7E+2	1.2E+2	2.9E+1	1.8E+2	1.4E+2	1.2E+2	1.2E+2
LOW			1.3E-1	4.6E+0	4.1E-1	4.2E+0	1.6E+1	8.8E+0	6.0E-1	5.2E-1

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

ANTIMONY

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210					2.3E+1			
A 35	6.0	3140					2.2E+1			
B 30	6.0	2710	1.0E+0	1.1E+1	6.5E-1	2.8E+0	1.6E+1	1.2E+1	3.5E+0	3.5E+0
B 31	6.0	2670	1.9E+0	1.7E+1	6.5E-1	2.9E+0	2.2E+1	1.6E+1	3.7E+0	3.6E+0
B 33	6.1	2130	1.8E+0	1.3E+1	6.4E-1	3.0E+0	1.8E+1	1.3E+1	3.8E+0	3.7E+0
C 44	8.9	4380	1.5E+1	1.8E+1	8.1E-1	6.4E-1	3.4E+1	1.7E+1	1.7E+0	1.5E+0
C 45	8.3	4360	1.4E+1	1.3E+1	4.6E-1	6.4E-1	2.8E+1	1.2E+1	1.3E+0	1.1E+0
C 46	9.0	3230	1.2E+1	4.0E+0	5.6E-1	6.4E-1	1.7E+1	5.2E+0	1.3E+0	1.2E+0
AVERAGE			5.6E+0	9.5E+0	4.7E-1	1.3E+0	2.2E+1	1.5E+1	7.5E+0	7.4E+0
HIGH			1.5E+1	1.8E+1	8.1E-1	3.0E+0	3.4E+1	2.3E+1	2.3E+1	2.3E+1
LOW			1.0E+0	4.0E+0	4.6E-1	6.4E-1	1.6E+1	5.2E+0	1.3E+0	1.1E+0

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	9.1E+0	3.0E+1	0.0	0.0	3.9E+1	1.7E+1	2.7E-1	5.8E-1
E 16	8.3	2760	7.6E-1	6.1E+0	2.5E+0	0.0	9.4E+0	5.9E+0	2.6E+0	2.6E+0
E 17	6.2	2770	1.5E+0	4.9E+0	2.2E+0	0.0	8.5E+0	4.9E+0	2.2E+0	2.2E+0
F 22	6.0	2980	7.4E-1	2.6E+0	3.7E+0	0.0	7.0E+0	5.1E+0	3.7E+0	3.7E+0
F 30	6.8	2690	5.2E+0	2.5E+0	3.1E+0	0.0	1.1E+1	4.6E+0	3.1E+0	3.1E+0
G 15	8.7	3230	8.2E+0	1.4E+1	1.1E+0	0.0	2.4E+1	9.3E+0	1.3E+0	1.2E+0
G 20	9.2	2320	1.1E+0	6.3E+0	1.6E+0	0.0	9.0E+0	5.1E+0	1.7E+0	1.7E+0
H 11	9.4	1980	2.2E+1	4.6E+0	2.6E+0	0.0	3.0E+1	5.9E+0	2.8E+0	3.0E+0
I 09	5.9	2700	6.6E+0	9.4E+1	1.3E+1	0.0	1.1E+2	6.5E+1	1.3E+1	1.4E+1
I 16	7.8	1670	3.9E+0	5.6E+0	3.3E+0	1.7E+0	1.5E+1	8.2E+0	5.1E+0	5.2E+0
J 15	7.9	1550	3.3E-1	3.6E+1	1.7E+0	1.4E+0	4.0E+1	4.0E+1	3.3E+0	3.6E+0
J 16	8.9	2570	1.7E-1	7.1E+1	2.9E+0	1.4E+0	7.5E+1	7.5E+1	4.8E+0	5.4E+0
K 18	9.8	1240	3.7E-1	0.0	2.3E+0	1.4E+1	1.7E+1	1.7E+1	1.7E+1	1.7E+1
AVERAGES										
SPREADER,NO REINJ FROM D.C.			2.9E+0	6.1E+0	2.4E+0	0.0	1.1E+1	5.8E+0	2.4E+0	2.4E+0
MASS FIRED OVERFEED			6.1E+0	3.4E+1	3.6E+0	2.7E+0	4.7E+1	3.2E+1	6.6E+0	6.9E+0
HIGH			2.2E+1	9.4E+1	1.3E+1	1.4E+1	1.1E+2	7.5E+1	1.7E+1	1.7E+1
LOW			1.7E-1	2.5E+0	1.1E+0	1.4E+0	7.0E+0	4.6E+0	2.7E-1	5.8E-1

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

TELLURIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - UG/DRY SCM* 10 UM + 3 UM CYCLONE	1 UM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210					1.4E+0			
A 35	6.0	3146					1.7E+0			
B 30	6.0	2710	6.7E+0	7.1E-1	3.1E-1	5.6E+0	1.3E+1	7.0E+0	6.8E+0	5.9E+0
B 31	6.0	2670	6.8E+0	1.6E+0	3.3E-1	5.8E+0	1.5E+1	8.0E+0	6.2E+0	6.2E+0
B 33	6.1	2130	6.2E+0	2.5E+0	6.4E-1	6.0E+0	1.5E+1	9.1E+0	6.7E+0	6.7E+0
C 44	6.9	4380	4.4E+0	9.0E-1	1.0E-1	1.3E+0	6.7E+0	2.4E+0	1.4E+0	1.4E+0
C 45	6.3	4360	4.1E+0	7.0E-1	1.0E-1	6.4E+0	1.1E+1	7.4E+0	6.5E+0	6.5E+0
C 46	9.0	3230	3.5E+0	3.0E-1	1.0E-1	1.3E+0	5.3E+0	2.0E+0	1.4E+0	1.4E+0
AVERAGE			4.0E+0	6.5E-1	2.0E-1	3.3E+0	9.7E+0	4.9E+0	3.9E+0	3.9E+0
HIGH			6.8E+0	2.5E+0	6.4E-1	6.4E+0	1.5E+1	9.1E+0	6.7E+0	6.7E+0
LOW			3.5E+0	3.0E-1	1.0E-1	1.3E+0	1.4E+0	1.4E+0	1.4E+0	1.4E+0

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - UG/DRY SCM* 18.5 UM +5.9 UM CYCLONE	1.4 UM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2870	4.6E-1	3.2E-1	0.0	0.0	7.8E-1	1.9E-1	5.4E-3	1.2E-2
E 16	4.3	2760	1.5E+0	1.8E-1	4.1E-2	0.0	1.8E+0	1.9E-1	5.3E-2	4.8E-2
E 17	4.2	2770	1.5E+0	1.5E-1	1.6E-1	0.0	1.8E+0	2.9E-1	1.7E-1	1.7E-1
F 22	6.0	2980	4.9E+0	1.7E-1	6.9E-1	0.0	5.8E+0	9.4E-1	7.2E-1	7.1E-1
F 30	6.8	2890	3.4E+0	1.6E-1	4.2E-1	0.0	4.0E+0	6.2E-1	4.4E-1	4.3E-1
G 15	8.7	3230	6.6E+0	5.8E-1	5.3E+0	0.0	1.2E+1	5.9E+0	5.4E+0	5.4E+0
G 23	4.2	2320	8.8E-1	5.0E-1	8.2E+0	0.0	9.6E+0	8.5E+0	8.2E+0	8.2E+0
H 11	9.4	1980	6.7E-1	3.1E-2	1.2E+0	0.0	1.9E+0	1.2E+0	1.2E+0	1.2E+0
I 09	5.9	2700	2.6E+0	3.8E-1	1.2E+2	0.0	1.2E+2	1.2E+2	1.2E+2	1.2E+2
I 18	7.8	1670	3.9E-1	5.6E-1	1.3E+1	8.4E+0	2.3E+1	2.2E+1	2.2E+1	2.2E+1
J 15	7.9	1550	6.6E-2	3.6E-1	1.1E+1	4.2E+0	1.6E+1	1.6E+1	1.5E+1	1.5E+1
J 16	8.9	2570	8.3E-2	2.8E-1	1.7E+1	4.3E+0	2.2E+1	2.2E+1	2.2E+1	2.2E+1
K 16	9.8	1280	3.7E-1	0.0	5.7E+0	2.9E+1	3.5E+1	3.4E+1	3.4E+1	3.4E+1
AVERAGES										
SPREADER,NO REINJ FROM D.C.			3.1E+0	2.9E-1	2.5E+0	0.0	5.9E+0	2.7E+0	2.5E+0	2.5E+0
MASS FIRED OVERFEED			6.7E-1	2.8E-1	2.4E+1	6.5E+0	3.1E+1	3.1E+1	3.0E+1	3.0E+1
HIGH			6.6E+0	5.8E-1	1.2E+2	2.9E+1	1.2E+2	1.2E+2	1.2E+2	1.2E+2
LOW			6.6E-2	3.1E-2	4.1E-2	4.2E+0	7.8E-1	1.9E-1	5.4E-3	1.2E-2

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

µg/dry scm

IODINE

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	1.9E+0	2.0E-1	1.6E-1	1.4E+0	3.7E+0	1.9E+0	1.6E+0	1.6E+0
B 31	6.0	2670	1.9E+0	5.0E-1	1.6E-1	1.5E+0	4.1E+0	2.2E+0	1.6E+0	1.6E+0
B 33	6.1	2130	8.8E-1	1.5E-1	1.6E-1	1.5E+0	2.7E+0	1.9E+0	1.7E+0	1.7E+0
C 44	9.9	4380	8.8E-1	7.4E-2	1.0E-1	6.4E-1	1.7E+0	8.7E-1	7.4E-1	7.4E-1
C 45	8.3	4360	8.1E-1	9.4E-2	1.0E-1	6.4E-1	1.6E+0	8.8E-1	7.5E-1	7.4E-1
C 46	9.0	3230	2.3E+0	4.8E-2	5.1E-2	6.4E-1	3.1E+0	9.3E-1	7.1E-1	6.9E-1
AVERAGE			1.5E+0	1.8E-1	1.2E-1	1.0E+0	2.8E+0	1.4E+0	1.2E+0	1.2E+0
HIGH			2.3E+0	5.0E-1	1.6E-1	1.5E+0	4.1E+0	2.2E+0	1.7E+0	1.7E+0
LOW			8.1E-1	4.8E-2	5.1E-2	6.4E-1	1.6E+0	8.7E-1	7.1E-1	6.9E-1

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 10.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	3.0E-1	1.4E-1	0.0	0.0	4.5E-1	8.8E-2	3.1E-3	6.7E-3
E 16	8.3	2760	5.1E+0	6.1E-1	0.0	0.0	5.7E+0	5.0E-1	4.0E-2	2.3E-2
E 17	6.2	2770	4.9E+0	4.9E-1	1.1E-1	0.0	5.5E+0	5.3E-1	1.4E-1	1.3E-1
F 22	6.0	2980	1.6E+1	5.8E-1	5.1E-1	0.0	1.8E+1	1.4E+0	6.3E-1	5.8E-1
F 30	6.8	2890	1.1E+1	5.5E-1	7.0E-1	0.0	1.3E+1	1.4E+0	7.8E-1	7.5E-1
G 15	8.7	3230	3.3E+0	1.4E-3	2.3E+0	0.0	5.6E+0	2.4E+0	2.3E+0	2.3E+0
G 23	9.2	2320	4.4E+0	1.3E-3	2.5E+0	0.0	6.9E+0	2.6E+0	2.5E+0	2.5E+0
H 11	9.4	1980	1.1E-2	1.0E-1	5.8E-1	0.0	7.0E-1	6.4E-1	5.8E-1	5.9E-1
I 09	5.9	2700	0.0	1.9E-1	0.0	0.0	1.9E-1	1.0E-1	1.3E-3	2.8E-3
I 18	7.8	1670	2.4E+0	4.2E-1	6.7E+0	4.2E+0	1.4E+1	1.1E+1	1.1E+1	1.1E+1
J 15	7.9	1550	6.6E-2	1.5E-1	5.5E+0	4.2E+0	9.9E+0	9.9E+0	9.7E+0	9.7E+0
J 16	8.9	2570	3.3E-2	1.4E-1	1.1E+1	4.3E+0	1.6E+1	1.6E+1	1.6E+1	1.6E+1
K 18	9.8	1280	1.8E-1	0.0	2.3E+0	1.4E+1	1.7E+1	1.7E+1	1.7E+1	1.7E+1
AVERAGES										
SPREADER,NO REINJ FROM D.C.			7.6E+0	3.7E-1	1.0E+0	0.0	9.0E+0	1.5E+0	1.1E+0	1.0E+0
MASS FIRED OVERFEED			4.2E-1	1.6E-1	3.8E+0	3.9E+0	8.2E+0	7.8E+0	7.6E+0	7.7E+0
HIGH			1.6E+1	6.1E-1	1.1E+1	1.4E+1	1.8E+1	1.7E+1	1.7E+1	1.7E+1
LOW			1.1E-2	1.3E-3	1.1E-1	4.2E+0	1.9E-1	8.8E-2	1.3E-3	2.8E-3

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

CESIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS - µG/DRY SCM: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.6	2710	6.7E+0	7.0E+0	7.8E-1	1.4E+1	2.9E+1	2.1E+1	1.5E+1	1.5E+1
B 31	6.0	2670	9.7E+0	1.5E+1	5.4E-1	1.5E+1	4.0E+1	2.7E+1	1.5E+1	1.5E+1
B 33	6.1	2130	6.2E+0	2.0E+1	8.0E-1	1.5E+1	4.2E+1	3.2E+1	1.6E+1	1.6E+1
C 44	8.9	4380	2.9E+2	7.0E+0	5.0E-2	0.0	3.0E+2	3.1E+1	2.1E+0	5.0E-1
C 45	8.3	4360	2.7E+2	6.0E+0	5.1E-2	0.0	2.8E+2	2.8E+1	2.0E+0	4.7E-1
C 46	9.0	3230	1.2E+2	7.1E+0	1.0E-2	0.0	1.2E+2	1.6E+1	8.8E-1	2.0E-1
AVERAGE			1.2E+2	1.0E+1	3.7E-1	7.3E+0	1.4E+2	2.6E+1	8.5E+0	7.8E+0
HIGH			2.9E+2	2.0E+1	8.0E-1	1.5E+1	3.0E+2	3.2E+1	1.6E+1	1.6E+1
LOW			6.2E+0	6.0E+0	1.0E-2	1.4E+1	2.9E+1	1.6E+1	8.8E-1	2.0E-1

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS - µG/DRY SCM: 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	4.6E+0	1.2E+0	0.0	0.0	5.8E+0	8.2E-1	4.1E-2	8.7E-2
E 16	8.3	2760	7.6E+0	3.0E+0	9.2E-3	0.0	1.1E+1	1.9E+0	8.4E-2	5.2E-2
E 17	6.2	2770	2.4E+0	9.7E+0	2.1E-2	0.0	1.2E+1	5.4E+0	1.1E-1	7.0E-2
F 22	6.0	2980	3.3E+0	2.9E-1	3.4E-2	0.0	3.6E+0	3.0E-1	5.9E-2	4.9E-2
F 30	6.8	2890	8.0E+0	1.1E-1	4.2E-2	0.0	8.2E+0	3.6E-1	1.0E-1	7.5E-2
G 15	6.7	3230	1.3E+1	2.9E+0	1.5E-1	0.0	1.6E+1	2.2E+0	2.6E-1	2.2E-1
G 20	9.2	2320	8.8E+0	5.0E-1	5.0E-2	0.0	9.4E+0	6.1E-1	1.2E-1	9.7E-2
H 11	9.4	1940	4.5E+0	3.6E+0	1.2E-1	0.0	8.2E+0	2.2E+0	1.7E-1	2.4E-1
I 09	5.9	2700	5.3E+0	7.6E+0	4.8E+0	0.0	1.8E+1	9.1E+0	4.9E+0	5.0E+0
I 18	7.8	1670	3.1E+0	6.9E+0	6.7E-1	6.7E-1	1.1E+1	5.3E+0	1.4E+0	1.5E+0
J 15	7.9	1550	2.7E-1	5.8E+0	5.9E-1	5.6E-1	7.1E+0	7.1E+0	1.1E+0	1.1E+0
J 16	8.9	2570	6.7E-1	5.7E+0	5.2E-1	5.8E-1	7.4E+0	7.4E+0	1.1E+0	1.2E+0
K 18	9.8	1240	6.2E-2	0.0	4.0E-1	4.3E+0	4.7E+0	4.7E+0	4.7E+0	4.7E+0
AVERAGES SPREADER,NO REINJ FROM D.C.			7.2E+0	2.8E+0	5.1E-2	0.0	1.0E+1	1.8E+0	1.2E-1	9.1E-2
MASS FIRED OVERFEED			2.6E+0	4.4E+0	1.0E+0	8.7E-1	8.9E+0	5.2E+0	1.9E+0	2.0E+0
HIGH			1.3E+1	9.7E+0	4.8E+0	4.3E+0	1.8E+1	9.1E+0	4.9E+0	5.0E+0
LOW			6.2E-2	1.1E-1	9.2E-3	5.6E-1	3.6E+0	3.0E-1	4.1E-2	4.9E-2

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

BARIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J BARIUM	*- - - EMISSIONS - µG/DRY SCM* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210	0.0					3.9E+2			
A 35	6.0	3140	0.0					4.6E+2			
B 30	6.0	2710	0.0	5.8E+2	3.1E+2	2.4E+0	5.6E+0	8.9E+2	2.9E+2	1.4E+1	9.3E+0
B 31	6.0	2670	0.0	9.7E+2	7.1E+2	2.4E+0	5.8E+0	1.7E+3	6.3E+2	2.0E+1	1.1E+1
B 33	6.1	2130	0.0	1.8E+3	9.3E+2	2.3E+0	6.0E+0	2.7E+3	8.6E+2	2.7E+1	1.2E+1
C 44	8.9	4380	0.0	2.9E+5	1.6E+3	1.0E+1	0.0	2.9E+5	2.7E+4	2.1E+3	4.5E+2
C 45	8.3	4360	0.0	1.4E+5	1.4E+3	5.1E+0	0.0	1.4E+5	1.3E+4	9.6E+2	2.1E+2
C 46	9.0	3230	0.0	1.2E+4	8.5E+2	3.0E+0	0.0	1.3E+4	1.7E+3	9.1E+1	2.2E+1
AVERAGE				5.5E+4	7.2E+2	3.2E+0	2.2E+0	5.6E+4	5.5E+3	5.0E+2	2.0E+2
HIGH				2.9E+5	1.6E+3	1.0E+1	6.0E+0	2.9E+5	2.7E+4	2.1E+3	4.6E+2
LOW				5.8E+2	3.1E+2	2.3E+0	5.6E+0	3.9E+2	2.9E+2	1.4E+1	9.3E+0

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J BARIUM	*- - - EMISSIONS - µG/DRY SCM* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	4.3	3.0E+1	8.2E+1	0.0	0.0	1.1E+2	4.6E+1	7.9E-1	1.7E+0
E 16	8.3	2760	2.7	5.1E+2	3.0E+2	4.6E+0	0.0	8.2E+2	1.9E+2	1.0E+1	7.9E+0
E 17	6.2	2770	3.5	4.9E+2	9.7E+2	5.3E-2	0.0	1.5E+3	5.5E+2	1.0E+1	5.9E+0
F 22	6.0	2980	2.4	8.2E+2	2.9E+1	1.7E+1	0.0	8.7E+2	5.9E+1	2.3E+1	2.1E+1
F 30	6.8	2890	4.4	1.1E+3	2.7E+1	7.0E+0	0.0	1.2E+3	5.9E+1	1.5E+1	1.2E+1
G 15	8.7	3230	6.6	1.6E+3	1.4E+2	7.6E+0	0.0	1.8E+3	1.4E+2	2.0E+1	1.5E+1
G 20	9.2	2320	2.5	4.4E+2	1.0E+2	1.6E+1	0.0	5.6E+2	8.6E+1	2.0E+1	1.9E+1
H 11	9.4	1980	1.2	4.5E+2	1.0E+1	1.8E+1	0.0	4.7E+2	3.7E+1	2.1E+1	2.4E+1
I 09	5.9	2700	1.0	4.0E+2	1.9E+1	6.0E+1	0.0	4.7E+2	8.3E+1	6.2E+1	6.6E+1
I 18	7.8	1670	5.4	4.7E+3	5.6E+1	2.7E+1	6.7E+0	4.8E+3	2.1E+2	6.7E+1	1.1E+2
J 15	7.9	1550	4.2	2.0E+2	1.5E+3	3.3E+1	5.6E+0	1.7E+3	1.7E+3	5.0E+1	6.3E+1
J 16	8.9	2570	1.8	1.0E+2	4.2E+1	5.2E+1	5.8E+0	2.0E+2	2.0E+2	5.8E+1	6.0E+1
K 18	9.8	1280	0.0	6.2E+1	0.0	2.8E+0	1.4E+1	7.9E+1	1.9E+1	1.8E+1	1.8E+1
AVERAGES											
SPREADER,NO REINJ FROM D.C.				8.4E+2	2.6E+2	8.8E+0	0.0	1.1E+3	1.8E+2	1.7E+1	1.3E+1
MASS FIRED OVERFEED				8.5E+2	2.4E+2	2.7E+1	4.6E+0	1.1E+3	3.3E+2	4.0E+1	4.8E+1
HIGH				4.7E+3	1.5E+3	6.0E+1	1.4E+1	4.8E+3	1.7E+3	6.7E+1	1.1E+2
LOW				3.0E+1	1.0E+1	5.3E-2	5.6E+0	7.9E+1	1.9E+1	7.9E-1	1.7E+0

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

LANTHANUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	1.9E+1	3.1E+0	7.8E-2	2.8E+0	2.5E+1	6.9E+0	3.0E+0	2.9E+0
B 31	6.0	2670	4.9E+1	1.6E+1	8.2E-2	2.9E+0	6.8E+1	1.9E+1	3.4E+0	3.1E+0
B 33	6.1	2130	8.8E+1	2.8E+1	8.0E-2	3.0E+0	1.2E+2	3.2E+1	3.9E+0	3.3E+0
C 44	8.9	4380	7.3E+2	1.7E+1	2.5E-2	0.0	7.5E+2	7.7E+1	5.3E+0	1.1E+0
C 45	8.3	4360	6.8E+2	1.6E+1	2.5E-2	0.0	6.9E+2	7.1E+1	4.9E+0	1.1E+0
C 46	9.0	3230	3.5E+2	1.7E+1	2.0E-2	0.0	3.7E+2	4.4E+1	2.6E+0	5.7E-1
AVERAGE			3.2E+2	1.6E+1	5.2E-2	1.5E+0	3.4E+2	4.2E+1	3.9E+0	2.0E+0
HIGH			7.3E+2	2.8E+1	8.2E-2	3.0E+0	7.5E+2	7.7E+1	5.3E+0	3.3E+0
LOW			1.9E+1	3.1E+0	2.0E-2	2.8E+0	2.5E+1	6.9E+0	2.6E+0	5.7E-1

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	1.5E+0	3.4E+0	0.0	0.0	4.9E+0	1.9E+0	3.5E-2	7.4E-2
E 16	8.3	2760	7.6E+1	2.7E+1	4.6E-2	0.0	1.0E+2	1.8E+1	7.7E-1	4.6E-1
E 17	6.2	2770	2.2E+1	2.4E+1	4.3E-2	0.0	4.6E+1	1.4E+1	3.7E-1	2.3E-1
F 22	6.0	2940	7.4E+1	1.7E+0	2.6E-1	0.0	7.6E+1	3.6E+0	7.9E-1	5.6E-1
F 30	6.8	2830	5.2E+1	2.5E+0	2.8E-1	0.0	5.4E+1	3.3E+0	6.6E-1	5.0E-1
G 15	8.7	3230	1.3E+2	1.2E+1	1.5E-1	0.0	1.4E+2	1.1E+1	1.2E+0	7.2E-1
G 20	9.2	2320	6.6E+1	1.1E+1	1.6E+0	0.0	7.9E+1	1.0E+1	2.2E+0	1.9E+0
H 11	9.4	1980	3.3E+1	1.5E+0	2.9E-1	0.0	3.5E+1	2.2E+0	5.4E-1	8.2E-1
I 09	5.9	2700	5.3E+1	1.9E+0	1.2E+1	0.0	6.7E+1	1.5E+1	1.2E+1	1.3E+1
I 18	7.8	1670	6.3E+1	1.4E+0	1.3E+0	1.7E+0	6.7E+1	5.8E+0	3.5E+0	4.0E+0
J 15	7.9	1550	6.6E+0	5.8E+0	1.1E+0	3.5E+0	1.7E+1	1.7E+1	4.7E+0	4.8E+0
J 16	8.9	2570	3.3E+0	2.1E+0	1.7E+0	1.4E+0	8.6E+0	8.6E+0	3.2E+0	3.2E+0
K 18	9.8	1280	6.2E+0	0.0	1.7E+0	1.4E+1	2.2E+1	1.6E+1	1.6E+1	1.6E+1
AVERAGES										
SPREADER, NO REINJ FROM D.C.			7.0E+1	1.3E+1	4.0E-1	0.0	8.4E+1	9.9E+0	1.0E+0	7.4E-1
MASS FIRED OVERFEED			2.4E+1	2.3E+0	2.6E+0	3.0E+0	3.2E+1	9.5E+0	5.7E+0	6.0E+0
HIGH			1.3E+2	2.7E+1	1.2E+1	1.4E+1	1.4E+2	1.8E+1	1.6E+1	1.6E+1
LOW			1.5E+0	1.4E+0	4.3E-2	1.4E+0	4.9E+0	1.9E+0	3.5E-2	7.4E-2

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

CERIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - UG/DRY SCM* 10 UM + 3 UM CYCLONE	1 UM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.8	2710	4.8E+1	2.1E+1	1.6E-1	2.8E+0	7.2E+1	2.3E+1	3.4E+0	3.1E+0
B 31	6.8	2670	6.8E+1	3.5E+1	1.6E-1	2.9E+0	1.1E+2	3.6E+1	3.8E+0	3.2E+0
B 33	6.1	2130	8.8E+1	4.7E+1	1.6E-1	3.0E+0	1.4E+2	4.6E+1	4.1E+0	3.4E+0
C 44	8.9	4380	1.0E+3	3.1E+1	1.0E-1	0.0	1.1E+3	1.1E+2	7.5E+0	1.7E+0
C 45	8.3	4360	9.5E+2	1.4E+1	5.1E-2	0.0	9.6E+2	9.4E+1	6.8E+0	1.5E+0
C 46	9.0	3230	8.2E+2	1.7E+1	5.1E-2	0.0	8.4E+2	8.5E+1	5.9E+0	1.3E+0
AVERAGE			5.0E+2	2.8E+1	1.1E-1	1.5E+0	5.3E+2	6.6E+1	5.3E+0	2.4E+0
HIGH			1.0E+3	4.7E+1	1.6E-1	3.0E+0	1.1E+3	1.1E+2	7.5E+0	3.4E+0
LOW			4.8E+1	1.4E+1	5.1E-2	2.8E+0	7.2E+1	2.3E+1	3.4E+0	1.3E+0

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - UG/DRY SCM* 18.5 UM +5.9 UM CYCLONE	1.4 UM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	1.1E+1	3.4E+0	0.0	0.0	1.4E+1	2.2E+0	1.0E-1	2.1E-1
E 16	8.3	2760	7.6E+1	3.0E+1	3.2E-2	0.0	1.1E+2	1.9E+1	7.8E-1	4.6E-1
E 17	6.2	2770	7.3E+1	1.5E+2	2.1E-2	0.0	2.2E+2	8.3E+1	1.6E+0	9.0E-1
F 22	6.0	2980	2.5E+2	2.9E+0	8.6E-2	0.0	2.5E+2	9.6E+0	1.8E+0	1.1E+0
F 30	6.8	2690	5.7E+1	2.7E+0	1.4E-1	0.0	6.0E+1	3.5E+0	5.6E-1	3.8E-1
G 15	8.7	3230	3.3E+2	2.9E+1	1.5E-1	0.0	3.6E+2	2.7E+1	2.7E+0	1.6E+0
G 20	9.2	2320	1.8E+2	2.5E+1	8.3E-2	0.0	2.0E+2	2.0E+1	1.5E+0	8.9E-1
H 11	9.4	1980	1.0E+2	3.1E+0	1.2E-1	0.0	1.0E+2	5.0E+0	8.4E-1	1.7E+0
I 09	5.9	2700	2.0E+2	1.9E+1	3.0E+0	0.0	2.2E+2	2.0E+1	4.5E+0	6.2E+0
I 10	7.8	1670	6.3E+2	5.6E+0	1.3E+0	6.7E-1	6.4E+2	2.5E+1	6.4E+0	1.2E+1
J 15	7.9	1550	2.7E+1	1.9E+1	4.4E-1	5.6E-1	4.2E+1	4.2E+1	1.3E+0	1.6E+0
J 16	8.9	2570	1.3E+1	5.7E+0	1.7E+0	5.8E-1	2.1E+1	2.1E+1	2.4E+0	2.6E+0
K 10	9.8	1280	1.2E+1	0.0	1.1E+0	4.3E+0	1.8E+1	5.8E+0	5.5E+0	5.6E+0
AVERAGES										
SPREADER,NO REINJ FROM D.C.			1.6E+2	3.9E+1	8.6E-2	0.0	2.0E+2	2.7E+1	1.5E+0	8.8E-1
MASS FIRED OVERFEED			1.4E+2	7.3E+0	1.1E+0	8.7E-1	1.5E+2	1.7E+1	3.0E+0	4.2E+0
HIGH			6.3E+2	1.5E+2	3.0E+0	4.3E+0	6.4E+2	8.3E+1	6.4E+0	1.2E+1
LOW			1.1E+1	2.7E+0	2.1E-2	5.6E-1	1.4E+1	2.2E+0	1.0E-1	2.1E-1

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

PRASEODYMIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	1.9E+0	1.5E+0	1.6E-1	2.8E+0	6.4E+0	4.3E+0	3.0E+0	3.0E+0
B 31	6.0	2670	1.9E+1	2.6E+0	1.6E-1	2.9E+0	2.5E+1	6.7E+0	3.2E+0	3.1E+0
B 33	6.1	2130	1.8E+1	6.9E+0	1.6E-1	3.0E+0	2.8E+1	9.9E+0	3.3E+0	3.2E+0
C 44	8.9	4380	1.0E+2	3.2E+0	3.5E-2	0.0	1.1E+2	1.1E+1	7.7E-1	1.9E-1
C 45	8.3	4360	9.5E+1	2.8E+0	3.6E-2	0.0	9.8E+1	1.0E+1	7.2E-1	1.8E-1
C 46	9.0	3230	5.8E+1	3.6E+0	2.5E-2	0.0	6.2E+1	7.8E+0	4.6E-1	1.2E-1
AVERAGE			4.9E+1	3.4E+0	1.0E-1	1.5E+0	5.4E+1	8.4E+0	1.9E+0	1.6E+0
HIGH			1.0E+2	6.9E+0	1.6E-1	3.0E+0	1.1E+2	1.1E+1	3.3E+0	3.2E+0
LOW			1.9E+0	1.5E+0	2.5E-2	2.8E+0	6.4E+0	4.3E+0	4.6E-1	1.2E-1

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	6.1E+0	1.2E+0	0.0	0.0	7.3E+0	8.7E-1	5.1E-2	1.1E-1
E 16	8.3	2760	2.3E+1	1.8E+1	9.2E-2	0.0	4.1E+1	1.1E+1	3.8E-1	2.6E-1
E 17	6.2	2770	7.3E+0	1.5E+1	1.1E-1	0.0	2.2E+1	8.4E+0	2.6E-1	1.9E-1
F 22	6.0	2980	4.9E+1	8.6E-1	3.4E-1	0.0	5.1E+1	2.4E+0	6.9E-1	5.4E-1
F 30	6.8	2690	1.7E+1	8.2E-1	2.1E-1	0.0	1.8E+1	1.2E+0	3.4E-1	2.8E-1
G 15	8.7	3230	3.3E+1	2.9E+0	1.5E-1	0.0	3.6E+1	2.8E+0	4.0E-1	3.0E-1
G 20	9.2	2320	4.4E+1	2.5E+0	8.2E-1	0.0	4.7E+1	3.6E+0	1.1E+0	1.0E+0
H 11	9.4	1980	1.1E+1	4.6E-1	4.7E-1	0.0	1.2E+1	1.1E+0	5.5E-1	6.4E-1
I 09	5.9	2730	1.3E+1	7.6E-1	1.2E+1	0.0	2.6E+1	1.3E+1	1.2E+1	1.2E+1
I 18	7.8	1670	3.9E+1	5.6E-1	1.3E+0	1.7E+0	4.3E+1	4.6E+0	3.3E+0	3.6E+0
J 15	7.9	1550	2.7E+0	1.5E+0	1.1E+0	1.4E+0	6.6E+0	6.6E+0	2.5E+0	2.6E+0
J 16	8.9	2570	3.3E+0	5.7E-1	1.7E+0	1.4E+0	7.1E+0	7.1E+0	3.2E+0	3.2E+0
K 18	9.8	1280	1.2E+0	0.0	1.7E+0	1.4E+1	1.7E+1	1.6E+1	1.6E+1	1.6E+1
AVERAGES										
SPREADER,NO REINJ FROM D.C.			2.9E+1	6.7E+0	2.9E-1	0.0	3.6E+1	4.9E+0	5.4E-1	4.3E-1
MASS FIRED OVERFEED			1.1E+1	7.2E-1	2.6E+0	2.7E+0	1.7E+1	7.0E+0	5.4E+0	5.5E+0
HIGH			4.9E+1	1.8E+1	1.2E+1	1.4E+1	5.1E+1	1.6E+1	1.6E+1	1.6E+1
LOW			1.2E+0	4.6E-1	9.2E-2	1.4E+0	6.6E+0	8.7E-1	5.1E-2	1.1E-1

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

NEODYMIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	9.6E+0	6.2E+0	3.1E-1	5.6E+0	2.2E+1	1.1E+1	6.0E+0	5.9E+0
B 31	6.0	2670	5.8E+1	1.3E+1	3.3E-1	5.8E+0	7.8E+1	2.1E+1	6.6E+0	6.3E+0
B 33	6.1	2130	5.3E+1	2.5E+1	3.2E-1	6.0E+0	8.4E+1	3.0E+1	6.9E+0	6.5E+0
C 44	3.9	4380	5.8E+2	1.0E+1	1.0E-1	0.0	5.9E+2	5.9E+1	4.3E+0	1.0E+0
C 45	8.3	4360	1.4E+2	8.4E+0	1.0E-1	0.0	1.4E+2	1.8E+1	1.1E+0	3.2E-1
C 46	9.0	3230	2.3E+2	1.1E+1	1.0E-1	0.0	2.4E+2	2.9E+1	1.8E+0	4.7E-1
AVERAGE			1.8E+2	1.2E+1	2.1E-1	2.9E+0	1.9E+2	2.8E+1	4.5E+0	3.4E+0
HIGH			5.8E+2	2.5E+1	3.3E-1	6.0E+0	5.9E+2	5.9E+1	6.9E+0	6.5E+0
LOW			9.6E+0	6.2E+0	1.0E-1	5.6E+0	2.2E+1	1.1E+1	1.1E+0	3.2E-1

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	13.2	2070	1.5E+0	9.4E+0	0.0	0.0	1.1E+1	5.2E+0	7.6E-2	1.6E-1
E 16	8.3	2750	1.5E+2	3.0E+1	2.3E-1	0.0	1.8E+2	2.2E+1	1.5E+0	1.0E+0
E 17	6.2	2770	2.4E+1	7.3E+1	1.6E-1	0.0	9.8E+1	4.1E+1	8.4E-1	5.5E-1
F 22	6.0	2980	8.2E+1	2.9E+0	6.9E-1	0.0	8.6E+1	4.9E+0	1.3E+0	1.0E+0
F 30	6.8	2890	5.7E+1	2.7E+0	4.2E-1	0.0	6.1E+1	3.8E+0	8.4E-1	6.6E-1
G 15	8.7	3230	8.2E+1	4.3E+0	1.5E+0	0.0	8.8E+1	6.5E+0	2.1E+0	1.9E+0
G 20	9.2	2320	4.4E+1	1.0E+1	1.6E+0	0.0	5.6E+1	8.6E+0	2.0E+0	1.9E+0
H 11	9.4	1940	1.0E+2	4.6E+0	1.8E+0	0.0	1.1E+2	7.5E+0	2.5E+0	3.3E+0
I 09	5.9	2700	5.3E+1	4.7E+0	1.2E+2	0.0	1.8E+2	1.2E+2	1.2E+2	1.2E+2
I 18	7.8	1670	1.6E+2	2.8E+0	6.7E+0	5.1E+0	1.7E+2	1.8E+1	1.3E+1	1.4E+1
J 15	7.9	1550	6.6E+0	3.6E+0	3.3E+0	4.2E+0	1.8E+1	1.8E+1	7.6E+0	7.6E+0
J 16	8.9	2570	5.0E+0	2.1E+0	1.1E+1	4.3E+0	2.3E+1	2.3E+1	1.6E+1	1.6E+1
K 18	9.8	1240	6.2E+0	0.0	1.7E+1	7.1E+1	9.5E+1	8.9E+1	8.8E+1	8.8E+1
AVERAGES										
SPREADER, NO REINJ FROM D.C.			7.4E+1	2.1E+1	7.8E-1	0.0	9.5E+1	1.4E+1	1.4E+0	1.2E+0
MASS FIRED OVERFEED			4.7E+1	3.9E+0	2.3E+1	1.2E+1	8.6E+1	4.1E+1	3.5E+1	3.6E+1
HIGH			1.6E+2	7.3E+1	1.2E+2	7.1E+1	1.8E+2	1.2E+2	1.2E+2	1.2E+2
LOW			1.5E+0	2.1E+0	1.6E-1	4.2E+0	1.1E+1	3.8E+0	7.6E-2	1.6E-1

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

SAMARIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	4.8E+0	1.9E+0	3.1E-1	5.6E+0	1.3E+1	7.8E+0	6.0E+0	5.9E+0
B 31	6.8	2670	1.9E+1	5.1E+0	3.3E-1	5.8E+0	3.1E+1	1.2E+1	6.3E+0	6.2E+0
B 33	6.1	2130	2.7E+1	9.3E+0	3.2E-1	6.0E+0	4.2E+1	1.6E+1	6.6E+0	6.4E+0
C 44	8.9	4380	7.3E+1	3.3E+0	1.0E-1	0.0	7.6E+1	9.0E+0	6.4E-1	2.2E-1
C 45	8.3	4360	4.1E+1	2.8E+0	1.0E-1	0.0	4.3E+1	5.7E+0	4.1E-1	1.7E-1
C 46	9.0	3230	5.8E+1	3.4E+0	5.1E-2	0.0	6.2E+1	7.8E+0	4.8E-1	1.4E-1
AVERAGE			3.7E+1	4.3E+0	2.0E-1	2.9E+0	4.5E+1	9.6E+0	3.4E+0	3.2E+0
HIGH			7.3E+1	9.3E+0	3.3E-1	6.0E+0	7.6E+1	1.6E+1	6.6E+0	6.4E+0
LOW			4.8E+0	1.9E+0	5.1E-2	5.6E+0	1.3E+1	5.7E+0	4.1E-1	1.4E-1

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
O 22	10.2	2070	4.6E+0	1.4E+0	0.0	0.0	6.0E+0	9.2E-1	4.2E-2	9.0E-2
E 16	8.3	2760	2.5E+1	9.1E+0	2.3E-1	0.0	3.5E+1	6.1E+0	4.7E-1	3.7E-1
E 17	6.2	2770	7.3E+0	7.3E+0	1.6E-1	0.0	1.5E+1	4.4E+0	2.6E-1	2.2E-1
F 22	6.6	2980	2.5E+1	8.6E-1	6.9E-1	0.0	2.6E+1	2.0E+0	8.7E-1	7.9E-1
F 30	6.8	2840	3.4E+1	1.6E+0	4.2E-1	0.0	3.7E+1	2.4E+0	6.7E-1	5.6E-1
G 15	8.7	3230	3.3E+1	2.9E+0	1.5E+0	0.0	3.7E+1	4.2E+0	1.8E+0	1.7E+0
G 20	9.2	2320	1.8E+1	2.5E+0	1.6E+0	0.0	2.2E+1	3.6E+0	1.8E+0	1.7E+0
H 11	9.4	1980	1.1E+1	5.1E-1	1.2E+0	0.0	1.3E+1	1.8E+0	1.2E+0	1.3E+0
I 09	5.9	2700	2.0E+1	7.6E-1	6.0E+1	0.0	8.0E+1	6.1E+1	6.0E+1	6.0E+1
I 18	7.8	1670	3.9E+1	1.4E+0	1.3E+1	5.1E+0	5.9E+1	2.0E+1	1.9E+1	1.9E+1
J 15	7.9	1550	1.7E+0	1.5E+0	1.1E+1	4.2E+0	1.8E+1	1.8E+1	1.5E+1	1.5E+1
J 16	8.9	2570	3.3E+0	1.4E+0	1.7E+1	4.3E+0	2.6E+1	2.6E+1	2.2E+1	2.2E+1
K 18	9.8	1280	2.5E+0	0.0	5.7E+0	2.9E+1	3.7E+1	3.4E+1	3.4E+1	3.4E+1
AVERAGES										
SPREADER, NO REINJ FROM D.C.			2.4E+1	4.1E+0	7.8E-1	0.0	2.9E+1	3.8E+0	1.0E+0	8.9E-1
MASS FIRED OVERFEED			1.2E+1	1.0E+0	1.5E+1	6.0E+0	3.4E+1	2.3E+1	2.2E+1	2.2E+1
HIGH			3.9E+1	9.1E+0	6.0E+1	2.9E+1	8.0E+1	6.1E+1	6.0E+1	6.0E+1
LOW			1.7E+0	5.1E-1	1.6E-1	4.2E+0	6.0E+0	9.2E-1	4.2E-2	9.0E-2

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

EUROPIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	2.9E+0	6.2E-1	3.1E-1	4.2E+0	8.0E+0	5.2E+0	4.5E+0	4.5E+0
B 31	6.0	2670	4.9E+0	3.0E+0	3.3E-1	4.4E+0	1.3E+1	7.4E+0	4.7E+0	4.7E+0
B 33	6.1	2130	4.4E+0	3.4E+0	3.2E-1	4.5E+0	1.3E+1	7.8E+0	4.9E+0	4.9E+0
C 44	8.9	4380	7.3E+1	1.0E+0	1.0E-1	0.0	7.4E+1	7.2E+0	6.2E-1	2.1E-1
C 45	8.3	4360	2.7E+1	7.1E-1	1.0E-1	0.0	2.8E+1	3.0E+0	3.0E-1	1.4E-1
C 46	9.0	3230	2.3E+1	1.0E+0	5.1E-2	0.0	2.4E+1	2.9E+0	2.2E-1	8.7E-2
AVERAGE			2.3E+1	1.6E+0	2.0E-1	2.2E+0	2.7E+1	5.6E+0	2.6E+0	2.4E+0
HIGH			7.3E+1	3.4E+0	3.3E-1	4.5E+0	7.4E+1	7.8E+0	4.9E+0	4.9E+0
LOW			2.9E+0	6.2E-1	5.1E-2	4.2E+0	8.0E+0	2.9E+0	2.2E-1	8.7E-2

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	1.1E+0	4.1E-1	0.0	0.0	1.5E+0	2.6E-1	1.0E-2	2.2E-2
E 16	8.3	2760	2.5E+0	2.7E+0	2.3E-1	0.0	5.5E+0	1.8E+0	2.7E-1	2.5E-1
E 17	6.2	2770	2.4E+0	2.4E+0	1.6E-1	0.0	5.0E+0	1.6E+0	1.9E-1	1.8E-1
F 22	6.0	2980	7.4E+0	2.6E-1	6.9E-1	0.0	8.3E+0	1.1E+0	7.4E-1	7.2E-1
F 30	6.8	2690	5.2E+0	2.7E-1	2.8E-1	0.0	5.7E+0	6.0E-1	3.2E-1	3.3E-1
G 15	8.7	3230	8.2E+0	7.2E-1	7.6E-1	0.0	9.7E+0	1.4E+0	8.2E-1	8.0E-1
G 20	9.2	2320	6.6E+0	6.3E-1	3.3E-1	0.0	7.6E+0	6.9E-1	3.8E-1	3.6E-1
H 11	9.4	1980	6.7E+0	3.1E-1	1.2E+0	0.0	8.2E+0	1.6E+0	1.2E+0	1.3E+0
I 09	5.9	2700	1.3E+1	2.8E-1	3.6E+1	0.0	4.9E+1	3.6E+1	3.6E+1	3.6E+1
I 18	7.8	1670	2.4E+1	5.6E-1	4.7E+0	5.1E+0	3.4E+1	1.1E+1	9.9E+0	1.0E+1
J 15	7.9	1550	1.0E+0	3.6E-1	3.3E+0	4.2E+0	8.9E+0	8.9E+0	7.5E+0	7.5E+0
J 16	8.9	2570	8.3E-1	3.5E-1	5.2E+0	4.3E+0	1.1E+1	1.1E+1	9.5E+0	9.5E+0
K 18	9.8	1280	6.2E-1	0.0	5.7E+0	2.9E+1	3.5E+1	3.4E+1	3.4E+1	3.4E+1
AVERAGES										
SPREADER, NO REINJ FROM D.C.			5.4E+0	1.2E+0	4.1E-1	0.0	7.0E+0	1.2E+0	4.5E-1	4.3E-1
MASS FIRED OVERFEED			6.7E+0	3.2E-1	8.0E+0	6.0E+0	2.1E+1	1.5E+1	1.4E+1	1.4E+1
HIGH			2.4E+1	2.7E+0	3.6E+1	2.9E+1	4.9E+1	3.6E+1	3.6E+1	3.6E+1
LOW			6.2E-1	2.6E-1	1.6E-1	4.2E+0	1.5E+0	2.6E-1	1.0E-2	2.2E-2

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KV8 4-15910-564

GADOLINIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	2.9E+0	9.3E-1	3.1E-1	5.6E+0	9.7E+0	6.9E+0	5.9E+0	5.9E+0
B 31	6.0	2670	9.7E+0	5.1E+0	3.3E-1	4.4E+0	2.0E+1	9.4E+0	4.8E+0	4.7E+0
B 33	6.1	2130	8.8E+0	8.1E+0	3.2E-1	6.0E+0	2.3E+1	1.3E+1	6.5E+0	6.4E+0
C 44	8.9	4380	1.5E+2	1.7E+0	3.5E-2	0.0	1.5E+2	1.4E+1	1.1E+0	2.6E-1
C 45	8.3	4360	2.7E+1	1.5E+0	3.6E-2	2.6E+0	3.1E+1	6.1E+0	2.8E+0	2.6E+0
C 46	9.0	3230	2.3E+1	1.8E+0	2.5E-2	0.0	2.5E+1	3.5E+0	2.0E-1	6.3E-2
AVERAGE			3.6E+1	3.2E+0	1.8E-1	3.1E+0	4.3E+1	8.9E+0	3.5E+0	3.3E+0
HIGH			1.5E+2	8.1E+0	3.3E-1	6.0E+0	1.5E+2	1.4E+1	6.5E+0	6.4E+0
LOW			2.9E+0	9.3E-1	2.5E-2	2.6E+0	9.7E+0	3.5E+0	2.0E-1	6.3E-2

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	1.5E+0	1.4E+0	0.0	0.0	2.9E+0	8.3E-1	2.1E-2	4.4E-2
E 16	8.3	2760	7.6E+0	9.1E+0	2.3E-1	0.0	1.7E+1	5.5E+0	3.5E-1	3.0E-1
E 17	6.2	2770	7.3E+0	1.5E+1	1.6E-1	0.0	2.2E+1	8.4E+0	3.1E-1	2.5E-1
F 22	6.0	2980	2.5E+1	8.6E-2	6.9E-1	0.0	2.5E+1	1.5E+0	8.6E-1	7.9E-1
F 30	6.8	2890	1.7E+1	8.2E-2	4.2E-1	0.0	1.8E+1	1.0E+0	5.4E-1	4.9E-1
G 15	8.7	3230	3.3E+1	2.9E+0	7.6E-1	0.0	3.7E+1	3.4E+0	1.0E+0	9.0E-1
G 20	9.2	2320	1.1E+1	1.0E+0	8.3E-2	0.0	1.2E+1	1.0E+0	1.7E-1	1.3E-1
H 11	9.4	1980	1.1E+1	4.6E-1	1.2E+0	0.0	1.3E+1	1.8E+0	1.2E+0	1.3E+0
I 09	5.9	2700	2.0E+1	4.7E-1	6.0E+1	0.0	8.0E+1	6.0E+1	6.0E+1	6.0E+1
I 18	7.8	1670	3.9E+1	8.3E-1	6.7E+0	5.1E+0	5.2E+1	1.3E+1	1.2E+1	1.2E+1
J 15	7.9	1550	2.7E+0	5.8E-1	5.5E+0	4.2E+0	1.3E+1	1.3E+1	9.7E+0	9.8E+0
J 16	8.9	2570	3.3E+0	5.7E-1	1.1E+1	4.3E+0	2.0E+1	2.0E+1	1.6E+1	1.6E+1
K 18	9.8	1280	2.5E+0	0.0	5.7E+0	2.9E+1	3.7E+1	3.4E+1	3.4E+1	3.4E+1
AVERAGES										
SPREADER,NO REINJ FROM D.C.			1.7E+1	4.6E+0	3.9E-1	0.0	2.2E+1	3.5E+0	5.4E-1	4.8E-1
MASS FIRED OVERFEED			1.1E+1	6.2E-1	1.3E+1	6.0E+0	3.1E+1	2.0E+1	1.9E+1	1.9E+1
HIGH			3.9E+1	1.5E+1	6.0E+1	2.9E+1	8.0E+1	6.0E+1	6.0E+1	6.0E+1
LOW			1.5E+0	8.2E-2	8.3E-2	4.2E+0	2.9E+0	8.3E-1	2.1E-2	4.4E-2

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

TERBIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	1.0E+0	2.2E-1	1.6E-1	2.8E+0	4.1E+0	3.2E+0	3.0E+0	3.0E+0
B 31	6.0	2670	1.0E+0	8.3E-1	1.6E-1	2.9E+0	4.9E+0	3.8E+0	3.1E+0	3.1E+0
B 33	6.1	2130	2.7E+0	7.6E-1	1.6E-1	3.0E+0	6.6E+0	4.0E+0	3.2E+0	3.2E+0
C 44	8.9	4380	1.5E+1	5.0E-1	3.5E-2	0.0	1.5E+1	1.7E+0	1.4E-1	5.8E-2
C 45	8.3	4360	1.4E+1	4.7E-1	3.6E-2	0.0	1.4E+1	1.6E+0	1.3E-1	5.7E-2
C 46	9.0	3230	1.2E+1	7.3E-1	2.5E-2	0.0	1.2E+1	1.6E+0	1.1E-1	4.4E-2
AVERAGE			7.4E+0	5.9E-1	1.0E-1	1.5E+0	9.5E+0	2.6E+0	1.6E+0	1.6E+0
HIGH			1.5E+1	8.3E-1	1.6E-1	3.0E+0	1.5E+1	4.0E+0	3.2E+0	3.2E+0
LOW			1.0E+0	2.2E-1	2.5E-2	2.8E+0	4.1E+0	1.6E+0	1.1E-1	4.4E-2

• STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR •

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2670	6.1E-1	2.6E-1	0.0	0.0	8.6E-1	1.6E-1	6.0E-3	1.3E-2
E 16	6.3	2760	2.3E+0	9.1E-1	9.2E-2	0.0	3.3E+0	6.7E-1	1.1E-1	1.0E-1
E 17	6.2	2770	2.4E+0	2.2E+0	4.3E-2	0.0	4.7E+0	1.3E+0	7.5E-2	6.1E-2
F 22	6.0	2940	2.5E+0	8.6E-2	6.9E-1	0.0	3.2E+0	8.1E-1	7.0E-1	7.0E-1
F 30	6.8	2890	5.2E+0	2.5E-1	1.4E-1	0.0	5.6E+0	4.4E-1	1.8E-1	1.6E-1
G 15	6.7	3230	3.3E+0	1.2E-1	3.8E-1	0.0	3.8E+0	5.5E-1	4.0E-1	3.9E-1
G 20	9.2	2320	1.8E+0	2.5E-1	8.3E-2	0.0	2.1E+0	2.8E-1	1.0E-1	9.1E-2
H 11	9.4	1940	1.1E+0	5.1E-2	2.9E-1	0.0	1.5E+0	3.6E-1	3.0E-1	3.1E-1
I 09	5.9	2700	3.3E+0	7.6E-2	1.2E+1	0.0	1.5E+1	1.2E+1	1.2E+1	1.2E+1
I 18	7.8	1670	6.3E+0	1.4E-1	2.7E+0	1.7E+0	1.1E+1	4.6E+0	4.4E+0	4.5E+0
J 15	7.9	1550	6.6E-1	1.5E-1	1.7E+0	1.4E+0	3.9E+0	3.9E+0	3.1E+0	3.1E+0
J 16	8.9	2570	3.3E-1	5.7E-2	2.9E+0	1.4E+0	4.7E+0	4.7E+0	4.3E+0	4.3E+0
K 18	9.8	1240	1.2E-1	0.0	1.7E+0	1.4E+1	1.6E+1	1.6E+1	1.6E+1	1.6E+1
AVERAGES										
SPREADER,NO REINJ FROM D.C.			2.9E+0	6.3E-1	2.4E-1	0.0	3.8E+0	6.8E-1	2.6E-1	2.5E-1
MASS FIRED OVERFEED			1.8E+0	1.0E-1	3.0E+0	2.7E+0	7.6E+0	6.0E+0	5.7E+0	5.7E+0
HIGH			6.3E+0	2.2E+0	1.2E+1	1.4E+1	1.6E+1	1.6E+1	1.6E+1	1.6E+1
LOW			1.2E-1	5.1E-2	4.3E-2	1.4E+0	8.6E-1	1.6E-1	6.0E-3	1.3E-2

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

DYSPROSIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	2.9E+0	1.2E+0	3.1E-1	5.6E+0	1.0E+1	7.1E+0	5.9E+0	5.9E+0
B 31	6.0	2670	1.9E+1	3.8E+0	3.3E-1	5.8E+0	2.9E+1	1.1E+1	6.3E+0	6.2E+0
B 33	6.1	2130	1.8E+1	8.8E+0	3.2E-1	6.0E+0	3.3E+1	1.5E+1	6.5E+0	6.4E+0
C 44	8.9	4380	7.3E+1	1.7E+0	1.0E-1	0.0	7.5E+1	7.8E+0	6.2E-1	2.1E-1
C 45	8.3	4360	4.1E+1	1.6E+0	1.0E-1	0.0	4.2E+1	4.9E+0	4.0E-1	1.6E-1
C 46	9.0	3230	5.8E+1	1.7E+0	5.1E-2	0.0	6.0E+1	6.5E+0	4.7E-1	1.4E-1
AVERAGE			3.5E+1	3.1E+0	2.0E-1	2.9E+0	4.2E+1	8.6E+0	3.4E+0	3.2E+0
HIGH			7.3E+1	8.8E+0	3.3E-1	6.0E+0	7.5E+1	1.5E+1	6.5E+0	6.4E+0
LOW			2.9E+0	1.2E+0	5.1E-2	5.6E+0	1.0E+1	4.9E+0	4.0E-1	1.4E-1

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 10.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	13.2	2070	1.5E+0	1.1E+0	0.0	0.0	2.6E+0	6.6E-1	1.8E-2	4.0E-2
E 16	8.3	2760	2.5E+1	1.8E+1	2.3E-1	0.0	4.4E+1	1.1E+1	5.4E-1	4.1E-1
E 17	6.2	2770	2.2E+1	7.3E+0	1.6E-1	0.0	2.9E+1	4.9E+0	3.7E-1	2.8E-1
F 22	6.0	2980	7.4E+1	1.7E+0	6.9E-1	0.0	7.6E+1	4.0E+0	1.2E+0	1.0E+0
F 30	6.8	2890	5.7E+1	2.5E+0	7.0E-1	0.0	6.1E+1	3.9E+0	1.1E+0	9.4E-1
G 15	8.7	3230	3.3E+1	1.2E+0	7.6E-1	0.0	3.5E+1	2.5E+0	1.0E+0	9.0E-1
G 20	9.2	2320	1.1E+1	2.5E+0	8.2E-1	0.0	1.4E+1	2.6E+0	9.1E-1	8.7E-1
H 11	9.4	1980	1.1E+1	5.1E-1	1.2E+0	0.0	1.3E+1	1.8E+0	1.2E+0	1.3E+0
I 09	5.9	2700	2.0E+1	4.7E-1	6.8E+1	0.0	8.0E+1	6.0E+1	6.0E+1	6.0E+1
I 18	7.8	1670	3.9E+1	8.3E-1	6.7E+0	5.1E+0	5.2E+1	1.3E+1	1.2E+1	1.2E+1
J 15	7.9	1550	1.7E+0	5.8E-1	5.5E+0	4.2E+0	1.2E+1	1.2E+1	9.7E+0	9.7E+0
J 16	8.9	2570	8.3E-1	5.7E-1	1.1E+1	4.3E+0	1.7E+1	1.7E+1	1.6E+1	1.6E+1
K 18	9.8	1280	1.2E+0	0.0	5.7E+0	2.9E+1	3.5E+1	3.4E+1	3.4E+1	3.4E+1
AVERAGES										
SPREADER, NO REINJ FROM D.C.			3.7E+1	5.6E+0	5.6E-1	0.0	4.3E+1	4.8E+0	8.6E-1	7.3E-1
MASS FIRED OVERFEED			1.1E+1	5.8E-1	1.3E+1	6.0E+0	3.0E+1	2.0E+1	1.9E+1	1.9E+1
HIGH			7.4E+1	1.8E+1	6.8E+1	2.9E+1	8.0E+1	6.0E+1	6.0E+1	6.0E+1
LOW			8.3E-1	4.7E-1	1.6E-1	4.2E+0	2.6E+0	6.6E-1	1.8E-2	4.0E-2

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

HOLMIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	1.0E+0	3.1E-1	1.6E-1	2.8E+0	4.2E+0	3.3E+0	3.0E+0	3.0E+0
B 31	6.0	2670	2.9E+0	5.9E-1	1.6E-1	2.9E+0	6.6E+0	3.8E+0	3.1E+0	3.1E+0
B 33	6.1	2130	5.3E+0	1.5E+0	1.6E-1	3.0E+0	1.0E+1	4.8E+0	3.2E+0	3.2E+0
C 44	4.9	4380	8.8E+0	5.6E-1	3.5E-2	0.0	9.4E+0	1.2E+0	1.0E-1	4.9E-2
C 45	8.3	4360	8.1E+0	4.3E-1	3.6E-2	0.0	8.6E+0	1.1E+0	1.0E-1	4.8E-2
C 46	9.0	3230	7.0E+0	6.8E-1	2.5E-2	0.0	7.7E+0	1.1E+0	7.9E-2	3.7E-2
AVERAGE			5.5E+0	6.8E-1	1.0E-1	1.5E+0	7.7E+0	2.5E+0	1.6E+0	1.6E+0
HIGH			8.8E+0	1.5E+0	1.6E-1	3.0E+0	1.0E+1	4.8E+0	3.2E+0	3.2E+0
LOW			1.0E+0	3.1E-1	2.5E-2	2.8E+0	4.2E+0	1.1E+0	7.9E-2	3.7E-2

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	13.2	2070	1.1E+0	2.6E-1	0.0	0.0	1.3E+0	1.7E-1	9.2E-3	2.0E-2
E 16	8.3	2760	2.5E+0	2.7E+0	9.2E-2	0.0	5.4E+0	1.7E+0	1.3E-1	1.1E-1
E 17	6.2	2770	2.4E+0	2.2E+0	1.1E-1	0.0	4.7E+0	1.4E+0	1.4E-1	1.3E-1
F 22	6.0	2980	8.2E+0	2.9E-1	3.4E-1	0.0	8.9E+0	7.6E-1	4.0E-1	3.8E-1
F 30	6.8	2890	5.7E+0	2.7E-1	2.8E-1	0.0	6.3E+0	6.1E-1	3.2E-1	3.0E-1
G 15	6.7	3230	4.9E+0	2.9E-1	7.6E-1	0.0	6.0E+0	1.1E+0	6.0E-1	7.8E-1
G 20	4.2	2320	4.4E+0	2.5E-1	3.3E-1	0.0	5.0E+0	6.1E-1	3.6E-1	3.5E-1
H 11	9.4	1980	3.3E+0	1.5E-1	1.2E+0	0.0	4.7E+0	1.4E+0	1.2E+0	1.2E+0
I 09	5.9	2700	3.3E+0	1.9E-1	1.2E+1	0.0	1.5E+1	1.2E+1	1.2E+1	1.2E+1
I 18	7.8	1670	3.9E+0	1.4E-1	2.7E+0	1.7E+0	8.4E+0	4.6E+0	4.4E+0	4.4E+0
J 15	7.9	1550	6.6E-1	1.5E-1	1.7E+0	1.4E+0	3.9E+0	3.9E+0	3.1E+0	3.1E+0
J 16	6.9	2570	1.3E-1	1.4E-1	2.9E+0	1.4E+0	4.6E+0	4.6E+0	4.3E+0	4.3E+0
K 18	9.8	1280	1.2E-1	0.0	2.8E+0	1.4E+1	1.7E+1	1.7E+1	1.7E+1	1.7E+1
AVERAGES										
SPREADER,NO REINJ FROM D.C.			4.7E+0	1.0E+0	3.2E-1	0.0	6.0E+0	1.0E+0	3.6E-1	3.4E-1
MASS FIRED OVERFEED			1.8E+0	1.5E-1	3.3E+0	2.7E+0	7.9E+0	6.3E+0	6.0E+0	6.0E+0
HIGH			8.2E+0	2.7E+0	1.2E+1	1.4E+1	1.7E+1	1.7E+1	1.7E+1	1.7E+1
LOW			1.2E-1	1.4E-1	9.2E-2	1.4E+0	1.3E+0	1.7E-1	9.2E-3	2.0E-2

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

ERBIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	9.6E+0	7.5E-1	3.1E-1	5.6E+0	1.6E+1	7.3E+0	6.0E+0	5.9E+0
B 31	6.0	2670	3.9E+0	2.0E+0	3.3E-1	5.8E+0	1.2E+1	8.0E+0	6.2E+0	6.2E+0
B 33	6.1	2130	8.8E+0	3.1E+0	3.2E-1	6.0E+0	1.8E+1	9.4E+0	6.4E+0	6.4E+0
C 44	8.9	4380	1.5E+1	7.4E-1	1.0E-1	0.0	1.5E+1	1.9E+0	2.1E-1	1.2E-1
C 45	8.3	4360	1.4E+1	6.3E-1	1.0E-1	0.0	1.4E+1	1.8E+0	2.0E-1	1.2E-1
C 46	9.0	3230	1.2E+1	1.0E+0	5.1E-2	0.0	1.3E+1	1.8E+0	1.4E-1	7.0E-2
AVERAGE			1.0E+1	1.4E+0	2.0E-1	2.9E+0	1.5E+1	5.0E+0	3.2E+0	3.1E+0
HIGH			1.5E+1	3.1E+0	3.3E-1	6.0E+0	1.8E+1	9.4E+0	6.4E+0	6.4E+0
LOW			3.9E+0	6.3E-1	5.1E-2	5.6E+0	1.2E+1	1.8E+0	1.4E-1	7.0E-2

• STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR •

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 10.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	1.5E+0	4.1E-1	0.0	0.0	1.9E+0	2.7E-1	1.3E-2	2.9E-2
E 16	8.3	2760	7.6E+0	2.7E+0	2.3E-1	0.0	1.1E+1	2.0E+0	3.0E-1	2.7E-1
E 17	6.2	2770	7.3E+0	2.2E+0	1.6E-1	0.0	9.7E+0	1.6E+0	2.3E-1	2.0E-1
F 22	6.0	2980	2.5E+1	2.9E-1	6.9E-1	0.0	2.6E+1	1.6E+0	8.6E-1	7.9E-1
F 30	6.8	2890	1.7E+1	8.2E-1	4.2E-1	0.0	1.8E+1	1.4E+0	5.5E-1	4.9E-1
G 15	8.7	3230	1.3E+1	4.3E-1	7.6E-1	0.0	1.4E+1	1.4E+0	8.6E-1	8.2E-1
G 20	9.2	2320	6.6E+0	3.8E-1	8.2E-1	0.0	7.8E+0	1.2E+0	8.7E-1	8.4E-1
H 11	9.4	1980	1.0E+1	3.1E-1	1.2E+0	0.0	1.1E+1	1.7E+0	1.2E+0	1.3E+0
I 09	5.9	2730	1.3E+1	2.6E-1	6.0E+1	0.0	7.3E+1	6.0E+1	6.0E+1	6.0E+1
I 18	7.8	1670	1.6E+1	5.6E-1	6.7E+0	5.1E+0	2.8E+1	1.3E+1	1.2E+1	1.2E+1
J 15	7.9	1550	1.0E+0	2.2E-1	5.5E+0	4.2E+0	1.1E+1	1.1E+1	9.7E+0	9.7E+0
J 16	8.9	2570	5.0E-1	2.1E-1	1.1E+1	4.3E+0	1.7E+1	1.7E+1	1.6E+1	1.6E+1
K 18	9.8	1260	6.2E-1	0.0	5.7E+0	2.9E+1	3.5E+1	3.4E+1	3.4E+1	3.4E+1
AVERAGES										
SPREADER,NO REINJ FROM D.C.			1.3E+1	1.1E+0	5.1E-1	0.0	1.4E+1	1.5E+0	6.1E-1	5.7E-1
MASS FIRED OVERFEED			6.1E+0	2.8E-1	1.3E+1	6.0E+0	2.5E+1	1.9E+1	1.9E+1	1.9E+1
HIGH			2.5E+1	2.7E+0	6.0E+1	2.9E+1	7.3E+1	6.0E+1	6.0E+1	6.0E+1
LOW			5.0E-1	2.1E-1	1.6E-1	4.2E+0	1.9E+0	2.7E-1	1.3E-2	2.9E-2

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

THULIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.8	2710	1.0E+0	1.5E-1	1.6E+0	2.8E+1	3.1E+1	3.0E+1	3.0E+1	3.0E+1
B 31	6.8	2670	1.0E+0	1.0E-1	1.6E+0	2.9E+1	3.2E+1	3.1E+1	3.1E+1	3.1E+1
B 33	6.1	2130	8.8E-1	3.4E-1	1.6E+0	3.0E+1	3.3E+1	3.2E+1	3.2E+1	3.2E+1
C 44	8.9	4380	4.4E+0	1.6E-1	1.0E-1	2.5E+0	7.2E+0	3.1E+0	2.7E+0	2.6E+0
C 45	8.3	4360	4.1E+0	1.6E-1	1.0E-1	0.0	4.3E+0	5.8E-1	1.3E-1	1.1E-1
C 46	9.0	3230	1.2E+0	2.4E-1	5.1E-2	0.0	1.5E+0	3.3E-1	6.1E-2	5.3E-2
AVERAGE			2.1E+0	1.9E-1	8.4E-1	1.5E+1	1.8E+1	1.6E+1	1.6E+1	1.6E+1
HIGH			4.4E+0	3.4E-1	1.6E+0	3.0E+1	3.3E+1	3.2E+1	3.2E+1	3.2E+1
LOW			8.8E-1	1.0E-1	5.1E-2	2.5E+0	1.5E+0	3.3E-1	6.1E-2	5.3E-2

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 10.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	1.5E-1	7.8E-2	0.0	0.0	2.3E-1	4.8E-2	1.6E-3	1.5E-3
E 16	8.3	2760	2.3E-1	3.0E-1	2.3E-1	0.0	7.6E-1	4.0E-1	2.3E-1	2.3E-1
E 17	6.2	2770	2.4E-1	2.4E-1	1.6E-1	0.0	6.5E-1	3.0E-1	1.6E-1	1.6E-1
F 22	6.0	2980	1.6E+0	5.8E-2	6.9E-1	0.0	2.4E+0	7.7E-1	7.0E-1	6.9E-1
F 33	6.8	2690	1.1E+0	2.7E-2	7.0E-1	0.0	1.9E+0	7.5E-1	7.1E-1	7.0E-1
G 15	6.7	3230	1.3E+0	2.9E-2	1.5E+0	0.0	2.9E+0	1.6E+0	1.5E+0	1.5E+0
G 20	9.2	2320	1.1E+0	1.0E-1	4.9E-1	0.0	1.7E+0	5.8E-1	5.0E-1	4.9E-1
H 11	9.4	1980	1.1E+0	5.1E-2	1.2E+0	0.0	2.3E+0	1.2E+0	1.2E+0	1.2E+0
I 09	5.9	2700	5.3E-1	4.7E-2	3.6E+1	0.0	3.6E+1	3.6E+1	3.6E+1	3.6E+1
I 18	7.6	1670	1.6E+0	2.8E-2	1.3E+1	1.7E+1	3.2E+1	3.0E+1	3.0E+1	3.0E+1
J 15	7.9	1550	1.7E-1	3.6E-2	1.1E+1	1.4E+1	2.5E+1	2.5E+1	2.5E+1	2.5E+1
J 16	6.9	2570	5.0E-2	5.7E-2	1.7E+1	1.4E+1	3.2E+1	3.2E+1	3.2E+1	3.2E+1
K 18	9.8	1280	1.2E-1	0.0	2.8E+0	1.4E+1	1.7E+1	1.7E+1	1.7E+1	1.7E+1
AVERAGES										
SPREADER, NO REINJ FROM D.C.			9.5E-1	1.3E-1	6.3E-1	0.0	1.7E+0	7.3E-1	6.4E-1	6.4E-1
MASS FIRED OVERFEED			5.3E-1	4.2E-2	1.2E+1	8.5E+0	2.1E+1	2.0E+1	2.0E+1	2.0E+1
HIGH			1.6E+0	3.0E-1	3.6E+1	1.7E+1	3.6E+1	3.6E+1	3.6E+1	3.6E+1
LOW			5.0E-2	2.7E-2	1.6E-1	1.4E+1	2.3E-1	4.8E-2	1.6E-3	3.5E-3

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

YTTERBIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	2.9E+0	6.6E-1	3.1E-1	5.6E+0	9.5E+0	6.7E+0	5.9E+0	5.9E+0
B 31	6.0	2670	3.9E+0	4.3E-1	3.3E-1	5.8E+0	1.0E+1	6.8E+0	6.2E+0	6.2E+0
B 33	6.1	2130	8.8E+0	3.1E+0	3.2E-1	6.0E+0	1.8E+1	9.4E+0	6.4E+0	6.4E+0
C 44	8.9	4380	1.5E+1	9.2E-1	1.0E-1	0.0	1.6E+1	2.1E+0	2.1E-1	1.2E-1
C 45	8.3	4360	1.4E+1	7.8E-1	1.0E-1	0.0	1.4E+1	1.9E+0	2.0E-1	1.2E-1
C 46	9.0	3230	1.2E+1	1.2E+0	5.1E-2	0.0	1.3E+1	2.0E+0	1.4E-1	7.0E-2
AVERAGE			9.2E+0	1.2E+0	2.0E-1	2.9E+0	1.4E+1	4.8E+0	3.2E+0	3.1E+0
HIGH			1.5E+1	3.1E+0	3.3E-1	6.0E+0	1.8E+1	9.4E+0	6.4E+0	6.4E+0
LOW			2.9E+0	4.3E-1	5.1E-2	5.6E+0	9.5E+0	1.9E+0	1.4E-1	7.0E-2

• STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR •

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	1.5E+0	5.3E-1	0.0	0.0	2.0E+0	3.4E-1	1.4E-2	3.1E-2
E 16	8.3	2760	7.6E+0	9.1E-1	2.3E-1	0.0	8.8E+0	1.0E+0	2.9E-1	2.6E-1
E 17	6.2	2770	7.3E+0	7.3E-1	1.6E-1	0.0	8.2E+0	8.0E-1	2.2E-1	1.9E-1
F 22	6.0	2940	7.4E+0	2.6E-1	6.9E-1	0.0	8.3E+0	1.1E+0	7.4E-1	7.2E-1
F 30	6.8	2890	1.7E+1	8.2E-1	4.2E-1	0.0	1.8E+1	1.4E+0	5.5E-1	4.9E-1
G 15	8.7	3230	8.2E+0	4.3E-1	7.6E-1	0.0	9.4E+0	1.3E+0	8.2E-1	8.0E-1
G 20	9.2	2320	6.6E+0	6.3E-1	8.2E-1	0.0	8.1E+0	1.4E+0	8.7E-1	8.5E-1
H 11	9.4	1980	6.7E+0	3.1E-1	1.2E+0	0.0	8.2E+0	1.6E+0	1.2E+0	1.3E+0
I 09	5.9	2700	9.3E+0	4.7E-1	6.0E+1	0.0	6.5E+1	6.0E+1	6.0E+1	6.0E+1
I 18	7.8	1670	1.6E+1	8.3E-1	4.7E+0	5.1E+0	2.6E+1	1.1E+1	9.8E+0	1.0E+1
J 15	7.9	1550	1.0E+0	5.8E-1	3.3E+0	4.2E+0	9.1E+0	9.1E+0	7.5E+0	7.5E+0
J 16	8.9	2570	5.0E-1	3.5E-1	5.2E+0	4.3E+0	1.0E+1	1.0E+1	9.5E+0	9.5E+0
K 18	9.8	1240	6.2E-1	0.0	5.7E+0	2.9E+1	3.5E+1	3.4E+1	3.4E+1	3.4E+1
AVERAGES										
SPREADER,NO REINJ FROM D.C.			9.1E+0	6.3E-1	5.1E-1	0.0	1.0E+1	1.1E+0	5.8E-1	5.5E-1
MASS FIRED OVERFEED			4.5E+0	4.4E-1	1.1E+1	6.0E+0	2.2E+1	1.8E+1	1.7E+1	1.7E+1
HIGH			1.7E+1	9.1E-1	6.0E+1	2.9E+1	6.5E+1	6.0E+1	6.0E+1	6.0E+1
LOW			5.0E-1	2.6E-1	1.6E-1	4.2E+0	2.0E+0	3.4E-1	1.4E-2	3.1E-2

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

LUTETIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS - µG/DRY SCM: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	1.0E+0	5.7E-2	1.6E-1	2.8E+0	4.0E+0	3.1E+0	3.0E+0	3.0E+0
B 31	6.0	2670	1.0E+0	5.9E-2	1.6E-1	2.9E+0	4.1E+0	3.2E+0	3.1E+0	3.1E+0
B 33	6.1	2130	8.8E-1	9.3E-2	1.6E-1	3.0E+0	4.2E+0	3.3E+0	3.2E+0	3.2E+0
C 44	8.9	4380	1.5E+0	5.5E-2	3.5E-2	0.0	1.6E+0	2.1E-1	4.6E-2	3.8E-2
C 45	8.3	4360	1.4E+0	9.4E-2	3.6E-2	0.0	1.5E+0	2.3E-1	4.6E-2	3.8E-2
C 46	9.0	3230	1.2E+0	7.3E-2	2.5E-2	0.0	1.3E+0	1.8E-1	3.4E-2	2.7E-2
AVERAGE			1.1E+0	7.2E-2	1.0E-1	1.5E+0	2.8E+0	1.7E+0	1.6E+0	1.6E+0
HIGH			1.5E+0	9.4E-2	1.6E-1	3.0E+0	4.2E+0	3.3E+0	3.2E+0	3.2E+0
LOW			8.8E-1	5.5E-2	2.5E-2	2.8E+0	1.3E+0	1.8E-1	3.4E-2	2.7E-2

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS - µG/DRY SCM: 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
B 22	10.2	2070	1.5E-1	7.8E-2	0.0	0.0	2.3E-1	4.8E-2	1.6E-3	3.5E-3
E 16	8.3	2760	7.6E-1	2.7E-1	9.2E-2	0.0	1.1E+0	2.7E-1	1.0E-1	1.0E-1
E 17	6.2	2770	7.3E-1	2.4E-1	4.3E-2	0.0	1.0E+0	2.0E-1	4.9E-2	4.7E-2
F 22	6.0	2980	8.2E-1	2.9E-2	2.6E-1	0.0	1.1E+0	3.0E-1	2.6E-1	2.6E-1
F 30	6.8	2890	5.7E-1	2.7E-2	2.8E-1	0.0	8.8E-1	3.1E-1	2.8E-1	2.8E-1
G 15	8.7	3230	8.2E-1	2.9E-2	3.8E-1	0.0	1.2E+0	4.2E-1	3.9E-1	3.8E-1
G 20	9.2	2320	4.4E-1	2.5E-2	3.3E-1	0.0	7.9E-1	3.6E-1	3.3E-1	3.3E-1
H 11	9.4	1980	1.0E+0	1.5E-2	2.9E-1	0.0	1.3E+0	3.3E-1	3.0E-1	3.1E-1
I 09	5.9	2700	5.3E-1	1.9E-2	1.2E+1	0.0	1.2E+1	1.2E+1	1.2E+1	1.2E+1
I 18	7.8	1670	1.6E+0	2.8E-2	2.7E+0	1.7E+0	6.0E+0	4.4E+0	4.4E+0	4.4E+0
J 15	7.9	1550	6.5E-2	1.5E-2	1.7E+0	1.4E+0	3.1E+0	3.1E+0	3.1E+0	3.1E+0
J 16	8.9	2570	3.3E-2	1.4E-2	2.9E+0	1.4E+0	4.4E+0	4.4E+0	4.3E+0	4.3E+0
K 18	9.8	1280	1.2E-1	0.0	2.8E+0	1.4E+1	1.7E+1	1.7E+1	1.7E+1	1.7E+1
AVERAGES										
SPREADER, NO REINJ FROM D.C.			6.9E-1	1.0E-1	2.3E-1	0.0	1.0E+0	3.1E-1	2.4E-1	2.3E-1
MASS FIRED OVERFEED			5.0E-1	2.4E-2	3.2E+0	2.7E+0	6.4E+0	5.9E+0	5.9E+0	5.9E+0
HIGH			1.6E+0	2.7E-1	1.2E+1	1.4E+1	1.7E+1	1.7E+1	1.7E+1	1.7E+1
LOW			3.3E-2	1.4E-2	4.3E-2	1.4E+0	2.3E-1	4.8E-2	1.6E-3	3.5E-3

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

HAFNIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.8	2710	4.8E+0	1.3E-1	3.1E-1	5.6E+0	1.1E+1	6.4E+0	5.9E+0	5.9E+0
B 31	6.0	2670	4.9E+0	1.0E-1	3.3E-1	5.8E+0	1.1E+1	6.6E+0	6.2E+0	6.2E+0
B 33	6.1	2130	4.4E+0	1.6E-1	3.2E-1	6.0E+0	1.1E+1	6.9E+0	6.4E+0	6.4E+0
C 44	8.9	4380	1.5E+1	8.0E-1	1.0E-1	1.3E+0	1.7E+1	3.3E+0	1.5E+0	1.4E+0
C 45	8.3	4360	1.4E+0	2.9E-1	1.0E-2	0.0	1.7E+0	3.5E-1	2.2E-2	1.3E-2
C 46	9.0	3230	7.0E+0	1.1E-1	5.1E-2	1.3E+0	8.5E+0	2.0E+0	1.4E+0	1.3E+0
AVERAGE			6.2E+0	2.6E-1	1.9E-1	3.3E+0	1.0E+1	4.3E+0	3.6E+0	3.5E+0
HIGH			1.5E+1	8.0E-1	3.3E-1	6.0E+0	1.7E+1	6.9E+0	6.4E+0	6.4E+0
LOW			1.4E+0	1.0E-1	1.0E-2	1.3E+0	1.7E+0	3.5E-1	2.2E-2	1.3E-2

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	3.0E+0	8.2E-1	0.0	0.0	3.9E+0	5.5E-1	2.7E-2	5.8E-2
E 16	8.3	2760	2.5E+0	3.0E+0	2.3E-1	0.0	5.8E+0	2.0E+0	2.7E-1	2.5E-1
E 17	6.2	2770	2.4E+0	2.4E+0	1.6E-1	0.0	5.0E+0	1.6E+0	1.9E-1	1.8E-1
F 22	6.0	2980	8.2E+0	2.9E-1	6.9E-1	0.0	9.2E+0	1.1E+0	7.5E-1	7.2E-1
F 30	6.8	2690	1.7E+0	8.2E-2	7.0E-1	0.0	2.5E+0	8.0E-1	7.1E-1	7.1E-1
G 15	8.7	3230	1.3E+1	7.2E-1	7.6E-1	0.0	1.5E+1	1.6E+0	8.6E-1	8.2E-1
G 20	9.2	2320	1.1E+1	6.3E-1	1.6E+0	0.0	1.3E+1	2.3E+0	1.7E+0	1.7E+0
H 11	9.4	1980	3.3E-1	1.0E-1	1.2E+0	0.0	1.6E+0	1.2E+0	1.2E+0	1.2E+0
I 09	5.9	2700	2.6E+0	2.8E-1	6.0E+1	0.0	6.2E+1	6.0E+1	6.0E+1	6.0E+1
I 18	7.8	1670	3.1E+0	4.2E-1	6.7E+0	5.1E+0	1.5E+1	1.2E+1	1.2E+1	1.2E+1
J 15	7.9	1550	2.7E-1	2.2E-1	5.5E+0	4.2E+0	1.0E+1	1.0E+1	9.7E+0	9.7E+0
J 16	8.9	2570	6.7E-2	2.1E-1	1.1E+1	4.3E+0	1.6E+1	1.6E+1	1.6E+1	1.6E+1
K 18	9.8	1280	1.8E+0	0.0	5.7E+0	2.9E+1	3.6E+1	3.4E+1	3.4E+1	3.4E+1
AVERAGES										
SPREADER,NO REINJ FROM D.C.			6.5E+0	1.2E+0	6.9E-1	0.0	8.4E+0	1.6E+0	7.5E-1	7.3E-1
MASS FIRED OVERFEED			1.6E+0	2.9E-1	1.3E+1	6.0E+0	2.1E+1	1.9E+1	1.9E+1	1.9E+1
HIGH			1.3E+1	3.0E+0	6.0E+1	2.9E+1	6.2E+1	6.0E+1	6.0E+1	6.0E+1
LOW			6.7E-2	8.2E-2	1.6E-1	4.2E+0	1.6E+0	5.5E-1	2.7E-2	5.8E-2

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

TANTALUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	5.8E+0	3.7E-1	3.1E+0	4.2E+1	5.1E+1	4.6E+1	4.5E+1	4.5E+1
B 31	6.0	2670	5.8E+0	2.0E-1	3.2E+0	4.4E+1	5.3E+1	4.8E+1	4.7E+1	4.7E+1
B 33	6.1	2130	5.3E+0	3.2E-1	3.1E+0	4.5E+1	5.4E+1	4.9E+1	4.8E+1	4.8E+1
C 44	8.9	4380	4.4E+1	5.5E-2	3.0E-1	0.0	4.4E+1	4.2E+0	6.1E-1	3.7E-1
C 45	8.3	4360	2.7E+1	2.8E-1	5.1E-1	0.0	2.8E+1	3.1E+0	7.0E-1	5.5E-1
C 46	9.0	3230	3.5E+1	7.3E-2	1.0E-1	0.0	3.5E+1	3.2E+0	3.5E-1	1.5E-1
AVERAGE			2.0E+1	2.1E-1	1.7E+0	2.2E+1	4.4E+1	2.6E+1	2.4E+1	2.4E+1
HIGH			4.4E+1	3.7E-1	3.2E+0	4.5E+1	5.4E+1	4.9E+1	4.8E+1	4.8E+1
LOW			5.3E+0	5.5E-2	1.0E-1	4.2E+1	2.8E+1	3.1E+0	3.5E-1	1.5E-1

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 18.5 µM 45.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	7.6E-1	1.3E+0	0.0	0.0	2.0E+0	7.3E-1	1.4E-2	3.1E-2
E 16	8.3	2760	7.6E+0	6.1E-1	4.1E-1	0.0	8.7E+0	1.0E+0	4.7E-1	4.5E-1
E 17	6.2	2770	4.9E+0	7.3E-1	3.2E-1	0.0	5.9E+0	8.8E-1	3.6E-1	3.4E-1
F 22	6.0	2980	1.6E+1	5.8E-1	1.7E+0	0.0	1.9E+1	2.6E+0	1.8E+0	1.8E+0
F 30	6.8	2890	3.4E+0	1.6E-1	4.2E+0	0.0	7.8E+0	4.4E+0	4.2E+0	4.2E+0
G 15	8.7	3230	3.3E+0	1.0E-1	3.0E+0	0.0	6.4E+0	3.2E+0	3.1E+0	3.1E+0
G 20	9.2	2320	4.4E+0	8.8E-2	3.3E+0	0.0	7.8E+0	3.5E+0	3.3E+0	3.3E+0
H 11	3.4	1980	6.7E-1	1.0E-1	1.8E+0	0.0	2.5E+0	1.8E+0	1.8E+0	1.8E+0
I 09	5.9	2730	2.6E+0	6.6E-2	3.6E+1	0.0	3.8E+1	3.6E+1	3.6E+1	3.6E+1
I 18	7.8	1670	5.5E+0	5.6E-1	2.7E+1	1.7E+1	5.0E+1	4.4E+1	4.4E+1	4.4E+1
J 15	7.9	1550	3.3E-1	5.1E-1	1.7E+1	1.4E+1	3.1E+1	3.1E+1	3.1E+1	3.1E+1
J 16	8.9	2570	1.2E-1	4.9E-1	2.9E+1	4.3E+1	7.3E+1	7.3E+1	7.2E+1	7.2E+1
K 18	9.8	1280	4.9E-1	3.0	5.7E+0	7.1E+1	7.8E+1	7.7E+1	7.7E+1	7.7E+1
AVERAGES										
SPREADER, NO REINJ FROM D.C.			6.7E+0	3.8E-1	2.2E+0	0.0	9.2E+0	2.6E+0	2.2E+0	2.2E+0
MASS FIRED OVERFEED			1.5E+0	4.3E-1	1.6E+1	2.1E+1	3.9E+1	3.8E+1	3.7E+1	3.7E+1
HIGH			1.6E+1	1.3E+0	3.6E+1	7.1E+1	7.8E+1	7.7E+1	7.7E+1	7.7E+1
LOW			1.2E-1	6.6E-2	3.2E-1	1.4E+1	2.0E+0	7.3E-1	1.4E-2	3.1E-2

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

TUNGSTEN

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	2.9E+0	2.7E+0	3.1E+0	5.6E+0	1.4E+1	1.1E+1	8.8E+0	8.7E+0
B 31	6.0	2670	2.9E+0	7.3E+0	3.2E+0	5.8E+0	1.9E+1	1.5E+1	9.1E+0	9.0E+0
B 33	6.1	2130	2.7E+0	1.2E+1	4.7E+0	6.0E+0	2.6E+1	2.0E+1	1.1E+1	1.1E+1
C 44	6.9	4360	1.5E+1	3.3E+0	1.5E+0	7.6E+0	2.7E+1	1.3E+1	9.3E+0	9.2E+0
C 45	8.3	4360	6.8E+0	1.5E+0	5.1E-1	7.7E+0	1.6E+1	9.9E+0	8.3E+0	8.2E+0
C 46	9.0	3230	5.8E+0	2.3E+0	1.0E+0	7.7E+0	1.7E+1	1.1E+1	8.8E+0	8.7E+0
AVERAGE			5.9E+0	4.9E+0	2.4E+0	6.7E+0	2.0E+1	1.3E+1	9.2E+0	9.1E+0
HIGH			1.5E+1	1.2E+1	4.7E+0	7.7E+0	2.7E+1	2.0E+1	1.1E+1	1.1E+1
LOW			2.7E+0	1.5E+0	5.1E-1	5.6E+0	1.4E+1	9.9E+0	8.3E+0	8.2E+0

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 18.5 µM +5.3 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	1.5E+0	1.8E+1	0.0	0.0	1.9E+1	9.7E+0	1.3E-1	2.9E-1
E 16	6.3	2760	2.5E+0	3.0E+0	4.1E+0	0.0	9.7E+0	5.9E+0	4.2E+0	4.2E+0
E 17	6.2	2770	7.3E-1	1.5E+0	1.6E-1	0.0	2.4E+0	1.0E+0	1.8E-1	1.7E-1
F 22	6.0	2980	4.9E+0	8.6E-1	1.7E+0	0.0	7.5E+0	2.3E+0	1.8E+0	1.7E+0
F 30	6.8	2890	5.7E+0	8.2E-1	4.2E+0	0.0	1.1E+1	4.8E+0	4.2E+0	4.2E+0
G 15	8.7	3230	3.3E+0	4.3E-1	7.6E-1	0.0	4.5E+0	1.1E+0	7.9E-1	7.8E-1
G 20	4.2	2320	1.1E+0	1.0E+0	8.2E-1	0.0	2.9E+0	1.4E+0	8.3E-1	8.3E-1
H 11	9.4	1980	3.3E+0	1.5E+0	1.2E+1	0.0	1.7E+1	1.3E+1	1.2E+1	1.2E+1
I 09	5.9	2700	5.3E+0	1.9E+0	6.0E+1	0.0	6.7E+1	6.1E+1	6.0E+1	6.0E+1
I 18	7.8	1670	2.4E+0	2.8E+0	6.7E+1	5.1E+0	7.7E+1	7.3E+1	7.2E+1	7.2E+1
J 15	7.9	1550	1.0E-1	3.6E+0	5.5E+0	4.2E+0	1.3E+1	1.3E+1	9.7E+0	9.8E+0
J 16	8.9	2570	5.0E-2	3.5E+0	2.9E+1	4.3E+0	3.7E+1	3.7E+1	3.3E+1	3.3E+1
K 18	9.8	1240	3.7E-1	0.0	5.7E+0	2.9E+1	3.5E+1	3.4E+1	3.4E+1	3.4E+1
AVERAGES										
SPREADER,NO REINJ FROM D.C.			3.1E+0	1.3E+0	2.0E+0	0.0	6.3E+0	2.8E+0	2.0E+0	2.0E+0
MASS FIRED OVERFEED			1.9E+0	4.4E+0	2.5E+1	6.0E+0	3.8E+1	3.4E+1	3.1E+1	3.2E+1
HIGH			5.7E+0	1.8E+1	6.7E+1	2.9E+1	7.7E+1	7.3E+1	7.2E+1	7.2E+1
LOW			5.0E-2	4.3E-1	1.6E-1	4.2E+0	2.4E+0	1.0E+0	1.3E-1	1.7E-1

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

RHENIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	1.9E+0	7.5E-2	2.4E-1	4.2E+0	6.4E+0	4.7E+0	4.4E+0	4.4E+0
B 31	6.0	2670	1.3E+0	1.0E-1	2.2E-1	4.4E+0	6.6E+0	4.8E+0	4.6E+0	4.6E+0
B 33	6.1	2130	1.8E+0	1.6E-1	2.1E-1	4.5E+0	6.7E+0	5.0E+0	4.7E+0	4.7E+0
C 44	8.9	4380	4.4E+0	3.7E-2	5.0E-2	1.3E+0	5.7E+0	1.7E+0	1.4E+0	1.3E+0
C 45	8.3	4360	4.1E+0	3.1E-2	5.1E-2	1.3E+0	5.4E+0	1.7E+0	1.4E+0	1.3E+0
C 46	9.0	3230	3.5E+0	4.8E-2	5.1E-2	1.3E+0	4.9E+0	1.7E+0	1.4E+0	1.3E+0
AVERAGE			2.9E+0	7.5E-2	1.4E-1	2.8E+0	6.0E+0	3.3E+0	3.0E+0	3.0E+0
HIGH			4.4E+0	1.6E-1	2.4E-1	4.5E+0	6.7E+0	5.0E+0	4.7E+0	4.7E+0
LOW			1.8E+0	3.1E-2	5.0E-2	1.3E+0	4.9E+0	1.7E+0	1.4E+0	1.3E+0

• STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR •

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	13.2	2070	3.0E-1	1.7E-1	0.0	0.0	4.8E-1	1.0E-1	3.3E-3	7.1E-3
E 16	8.3	2760	1.5E+0	1.8E-1	9.2E-2	0.0	1.8E+0	2.4E-1	1.0E-1	1.0E-1
E 17	6.2	2770	1.5E+0	1.5E-1	1.6E-1	0.0	1.8E+0	2.9E-1	1.7E-1	1.7E-1
F 22	6.0	2980	2.5E+0	8.6E-2	6.9E-1	0.0	3.2E+0	8.1E-1	7.0E-1	7.0E-1
F 33	6.8	2690	1.7E+0	8.2E-2	2.8E-1	0.0	2.1E+0	3.8E-1	2.9E-1	2.9E-1
G 15	8.7	3230	6.6E-1	1.3E-1	7.6E-1	0.0	1.5E+0	8.5E-1	7.7E-1	7.6E-1
G 20	9.2	2320	8.8E-1	5.0E-2	4.9E-1	0.0	1.4E+0	5.4E-1	5.0E-1	4.9E-1
H 11	9.4	1980	6.7E-1	1.5E-2	1.2E+0	0.0	1.9E+0	1.2E+0	1.2E+0	1.2E+0
I 09	5.9	2700	2.6E-1	3.8E-2	3.6E+1	0.0	3.6E+1	3.6E+1	3.6E+1	3.6E+1
I 18	7.8	1670	3.1E-1	5.6E-2	4.7E+0	5.1E+0	1.0E+1	9.8E+0	9.7E+0	9.7E+0
J 15	7.9	1550	1.3E-2	2.9E-2	3.3E+0	4.2E+0	7.5E+0	7.5E+0	7.5E+0	7.5E+0
J 16	8.9	2570	6.7E-3	2.8E-2	5.2E+0	4.3E+0	9.5E+0	9.5E+0	9.5E+0	9.5E+0
K 18	9.8	1280	2.5E-1	0.0	5.7E+0	2.9E+1	3.4E+1	3.4E+1	3.4E+1	3.4E+1
AVERAGES										
SPREADER, NO REINJ FROM D.C.			1.5E+0	1.1E-1	4.1E-1	0.0	2.0E+0	5.2E-1	4.2E-1	4.2E-1
MASS FIRED OVERFEED			2.6E-1	4.8E-2	8.0E+0	6.0E+0	1.4E+1	1.4E+1	1.4E+1	1.4E+1
HIGH			2.5E+0	1.8E-1	3.6E+1	2.9E+1	3.6E+1	3.6E+1	3.6E+1	3.6E+1
LOW			6.7E-3	1.5E-2	9.2E-2	4.2E+0	4.8E-1	1.0E-1	3.3E-3	7.1E-3

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

OSMIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	2.9E+0	1.9E-1	6.3E-1	1.4E+1	1.8E+1	1.5E+1	1.5E+1	1.5E+1
B 31	6.0	2670	2.9E+0	1.2E-1	6.5E-1	1.5E+1	1.8E+1	1.6E+1	1.5E+1	1.5E+1
B 33	6.1	2130	2.7E+0	1.3E-1	6.4E-1	1.5E+1	1.8E+1	1.6E+1	1.6E+1	1.6E+1
C 44	8.9	4380	4.4E+0	5.5E-2	2.0E-1	0.0	4.6E+0	6.3E-1	2.3E-1	2.1E-1
C 45	8.3	4360	4.1E+0	4.7E-2	2.0E-1	0.0	4.3E+0	6.0E-1	2.3E-1	2.1E-1
C 46	9.0	3230	3.5E+0	7.3E-2	1.0E-1	0.0	3.7E+0	4.6E-1	1.3E-1	1.1E-1
AVERAGE			3.4E+0	1.0E-1	4.1E-1	7.3E+0	1.1E+1	8.0E+0	7.7E+0	7.7E+0
HIGH			4.4E+0	1.9E-1	6.5E-1	1.5E+1	1.8E+1	1.6E+1	1.6E+1	1.6E+1
LOW			2.7E+0	4.7E-2	1.0E-1	1.4E+1	3.7E+0	4.6E-1	1.3E-1	1.1E-1

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	4.6E-1	2.0E-1	0.0	0.0	6.6E-1	1.3E-1	4.6E-3	1.0E-2
E 16	8.3	2760	1.5E+0	1.8E-1	2.3E-1	0.0	1.9E+0	3.8E-1	2.4E-1	2.4E-1
E 17	6.2	2770	1.5E+0	1.5E-1	3.2E-1	0.0	1.9E+0	4.5E-1	3.3E-1	3.3E-1
F 22	6.0	2980	4.9E+0	1.7E-1	1.7E+0	0.0	6.8E+0	2.0E+0	1.8E+0	1.7E+0
F 30	6.8	2830	3.4E+0	1.6E-1	7.0E-1	0.0	4.3E+0	9.0E-1	7.2E-1	7.1E-1
G 15	8.7	3230	8.2E-1	1.3E-1	7.6E-1	0.0	1.7E+0	8.6E-1	7.7E-1	7.6E-1
G 20	9.2	2320	1.1E+0	6.3E-2	8.2E-1	0.0	2.0E+0	8.9E-1	8.2E-1	8.2E-1
H 11	9.4	1980	6.7E-1	3.1E-2	1.8E+0	0.0	2.5E+0	1.8E+0	1.8E+0	1.8E+0
I 09	5.9	2700	3.3E-1	4.7E-2	6.0E+1	0.0	6.0E+1	6.0E+1	6.0E+1	6.0E+1
I 18	7.8	1670	3.9E-1	8.3E-2	6.7E+0	8.4E+0	1.6E+1	1.5E+1	1.5E+1	1.5E+1
J 15	7.9	1550	1.7E-2	3.6E-2	5.5E+0	7.0E+0	1.3E+1	1.3E+1	1.2E+1	1.2E+1
J 16	8.9	2570	8.3E-3	3.5E-2	1.1E+1	7.2E+0	1.9E+1	1.9E+1	1.9E+1	1.9E+1
K 18	9.8	1280	2.5E-1	0.0	5.7E+0	2.9E+1	3.4E+1	3.4E+1	3.4E+1	3.4E+1
AVERAGES										
SPREADER,NO REINJ FROM D.C.			2.2E+0	1.4E-1	7.6E-1	0.0	3.1E+0	9.1E-1	7.7E-1	7.7E-1
MASS FIRED OVERFEED			3.0E-1	6.2E-2	1.3E+1	7.3E+0	2.1E+1	2.0E+1	2.0E+1	2.0E+1
HIGH			4.9E+0	2.0E-1	6.0E+1	2.9E+1	6.0E+1	6.0E+1	6.0E+1	6.0E+1
LOW			8.3E-3	3.1E-2	2.3E-1	7.0E+0	6.6E-1	1.3E-1	4.6E-3	1.0E-2

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

IRIDIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	2.9E+0	9.3E-2	3.1E-1	5.6E+0	8.9E+0	6.2E+0	5.9E+0	5.9E+0
B 31	6.0	2670	2.9E+0	7.9E-2	3.3E-1	5.8E+0	9.1E+0	6.5E+0	6.2E+0	6.2E+0
B 33	6.1	2130	2.7E+0	1.3E-1	3.2E-1	6.0E+0	9.1E+0	6.7E+0	6.4E+0	6.4E+0
C 44	8.9	4380	4.4E+0	5.5E-2	1.0E-1	0.0	4.5E+0	5.3E-1	1.3E-1	1.1E-1
C 45	3.3	4360	4.1E+0	4.7E-2	1.0E-1	1.3E+0	5.5E+0	1.8E+0	1.4E+0	1.4E+0
C 46	3.0	3230	3.5E+0	7.3E-2	5.1E-2	1.3E+0	4.9E+0	1.7E+0	1.4E+0	1.3E+0
AVERAGE			3.4E+0	7.9E-2	2.0E-1	3.3E+0	7.0E+0	3.9E+0	3.6E+0	3.5E+0
HIGH			4.4E+0	1.3E-1	3.3E-1	6.0E+0	9.1E+0	6.7E+0	6.4E+0	6.4E+0
LOW			2.7E+0	4.7E-2	5.1E-2	1.3E+0	4.5E+0	5.3E-1	1.3E-1	1.1E-1

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 10.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2670	3.0E-1	1.7E-1	0.0	0.0	4.8E-1	1.0E-1	3.3E-3	7.1E-3
E 16	8.3	2760	7.6E-1	9.1E-2	9.2E-2	0.0	9.5E-1	1.7E-1	1.0E-1	1.0E-1
E 17	6.2	2770	7.3E-1	7.3E-2	1.6E-1	0.0	1.0E+0	2.2E-1	1.7E-1	1.6E-1
F 22	6.0	2980	2.5E+0	8.6E-2	6.9E-1	0.0	3.2E+0	8.1E-1	7.0E-1	7.0E-1
F 30	6.8	2890	1.7E+0	8.2E-2	4.2E-1	0.0	2.2E+0	5.2E-1	4.3E-1	4.3E-1
G 15	8.7	3230	6.6E-1	7.2E-2	5.3E-1	0.0	1.3E+0	5.9E-1	5.4E-1	5.4E-1
G 20	9.2	2320	1.1E+0	6.3E-2	8.2E-1	0.0	2.0E+0	8.9E-1	8.2E-1	8.2E-1
H 11	9.4	1980	3.3E-1	1.5E-2	1.2E+0	0.0	1.5E+0	1.2E+0	1.2E+0	1.2E+0
I 09	5.9	2700	3.3E-1	4.7E-2	3.6E+1	0.0	3.6E+1	3.6E+1	3.6E+1	3.6E+1
I 18	7.8	1670	3.9E-1	8.3E-2	4.7E+0	5.1E+0	1.0E+1	9.8E+0	9.7E+0	9.7E+0
J 15	7.9	1550	1.7E-2	3.6E-2	3.3E+0	4.2E+0	7.5E+0	7.5E+0	7.5E+0	7.5E+0
J 16	8.9	2570	8.3E-3	3.5E-2	5.2E+0	4.3E+0	9.5E+0	9.5E+0	9.5E+0	9.5E+0
K 18	9.8	1280	2.5E-1	0.0	5.7E+0	2.9E+1	3.4E+1	3.4E+1	3.4E+1	3.4E+1
AVERAGES										
SPREADER, NO REINJ FROM D.C.			1.2E+0	7.8E-2	4.5E-1	0.0	1.8E+0	5.3E-1	4.6E-1	4.6E-1
MASS FIRED OVERFEED			2.3E-1	5.6E-2	8.0E+0	6.0E+0	1.4E+1	1.4E+1	1.4E+1	1.4E+1
HIGH			2.5E+0	1.7E-1	3.6E+1	2.9E+1	3.6E+1	3.6E+1	3.6E+1	3.6E+1
LOW			8.3E-3	1.5E-2	9.2E-2	4.2E+0	4.8E-1	1.0E-1	3.3E-3	7.1E-3

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

PLATINUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - UG/DRY SCM* 10 UM + 3 UM CYCLONE	1 UM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	4.8E+0	1.3E-1	3.1E-1	5.6E+1	6.1E+1	5.7E+1	5.6E+1	5.6E+1
B 31	6.0	2670	4.9E+0	1.0E-1	3.3E-1	7.3E+1	7.8E+1	7.4E+1	7.3E+1	7.3E+1
B 33	6.1	2130	4.4E+0	1.6E-1	3.2E-1	1.5E+1	2.0E+1	1.6E+1	1.5E+1	1.5E+1
C 44	8.9	4380	4.4E+0	5.5E-2	1.0E-1	0.0	4.5E+0	5.3E-1	1.3E-1	1.1E-1
C 45	8.3	4360	4.1E+0	4.7E-2	1.0E-1	0.0	4.2E+0	4.9E-1	1.3E-1	1.1E-1
C 46	9.0	3230	3.5E+0	7.3E-2	5.1E-2	0.0	3.6E+0	4.1E-1	7.6E-2	5.6E-2
AVERAGE			4.3E+0	9.3E-2	2.0E-1	2.4E+1	2.9E+1	2.5E+1	2.4E+1	2.4E+1
HIGH			4.9E+0	1.6E-1	3.3E-1	7.3E+1	7.8E+1	7.4E+1	7.3E+1	7.3E+1
LOW			3.5E+0	4.7E-2	5.1E-2	1.5E+1	3.6E+0	4.1E-1	7.6E-2	5.6E-2

• STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR •

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - UG/DRY SCM* 18.5 UM +5.9 UM CYCLONE	1.4 UM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	4.6E-1	3.2E-1	0.0	0.0	7.8E-1	1.9E-1	5.4E-3	1.2E-2
E 16	8.3	2760	7.6E-1	9.1E-2	9.2E-2	0.0	9.5E-1	1.7E-1	1.0E-1	1.0E-1
E 17	6.2	2770	7.3E-1	7.3E-2	1.6E-1	0.0	1.0E+0	2.2E-1	1.7E-1	1.6E-1
F 22	6.0	2980	2.5E+0	8.6E-2	6.9E-1	0.0	3.2E+0	8.1E-1	7.8E-1	7.8E-1
F 30	6.8	2830	1.7E+0	8.2E-2	4.2E-1	0.0	2.2E+0	5.2E-1	4.3E-1	4.3E-1
G 15	8.7	3230	8.2E-1	1.3E-1	7.6E-1	0.0	1.7E+0	8.6E-1	7.7E-1	7.6E-1
G 20	9.2	2320	1.1E+0	6.3E-2	8.2E-1	0.0	2.0E+0	8.9E-1	8.2E-1	8.2E-1
H 11	9.4	1980	3.3E-1	1.5E-2	1.2E+0	0.0	1.5E+0	1.2E+0	1.2E+0	1.2E+0
I 09	5.9	2700	3.3E-1	4.7E-2	6.0E+1	0.0	6.0E+1	6.0E+1	6.0E+1	6.0E+1
I 18	7.8	1670	3.9E-1	8.3E-2	4.7E+0	1.7E+1	2.2E+1	2.2E+1	2.2E+1	2.2E+1
J 15	7.9	1550	1.7E-2	3.6E-2	3.3E+0	1.4E+1	1.7E+1	1.7E+1	1.7E+1	1.7E+1
J 16	8.9	2570	8.3E-3	3.5E-2	5.2E+0	1.4E+1	2.0E+1	2.0E+1	2.0E+1	2.0E+1
K 18	9.8	1280	3.7E-1	0.0	5.7E+0	2.9E+1	3.5E+1	3.4E+1	3.4E+1	3.4E+1
AVERAGES										
SPREADER,NO REINJ FROM D.C.			1.3E+0	8.8E-2	4.9E-1	0.0	1.8E+0	5.8E-1	5.0E-1	4.9E-1
MASS FIRED OVERFEED			2.7E-1	7.7E-2	1.1E+1	1.1E+1	2.2E+1	2.2E+1	2.2E+1	2.2E+1
HIGH			2.5E+0	3.2E-1	6.0E+1	2.9E+1	6.0E+1	6.0E+1	6.0E+1	6.0E+1
LOW			8.3E-3	1.5E-2	9.2E-2	1.4E+1	7.8E-1	1.7E-1	5.4E-3	1.2E-2

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

GOLD

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	1.0E+0	5.7E-2	1.6E-1	1.4E+1	1.5E+1	1.4E+1	1.4E+1	1.4E+1
B 31	6.0	2670	1.0E+0	5.9E-2	1.6E-1	5.8E+0	7.0E+0	6.1E+0	6.0E+0	6.0E+0
B 33	6.1	2130	8.8E-1	9.3E-2	1.6E-1	1.5E+1	1.6E+1	1.5E+1	1.5E+1	1.5E+1
C 44	8.9	4380	1.5E+0	1.8E-2	5.0E-2	0.0	1.5E+0	1.9E-1	6.1E-2	5.3E-2
C 45	8.3	4360	1.4E+0	1.6E-2	5.1E-2	0.0	1.4E+0	1.8E-1	6.0E-2	5.3E-2
C 46	9.8	3230	1.2E+0	2.4E-2	2.5E-2	0.0	1.2E+0	1.5E-1	3.4E-2	2.7E-2
AVERAGE			1.1E+0	4.5E-2	1.0E-1	5.8E+0	7.1E+0	6.0E+0	5.9E+0	5.9E+0
HIGH			1.5E+0	9.3E-2	1.6E-1	1.5E+1	1.6E+1	1.5E+1	1.5E+1	1.5E+1
LOW			8.8E-1	1.6E-2	2.5E-2	5.8E+0	1.2E+0	1.5E-1	3.4E-2	2.7E-2

• STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR •

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	1.1E-1	6.9E-2	0.0	0.0	1.8E-1	4.2E-2	1.2E-3	2.6E-3
E 16	8.3	2760	5.1E-1	6.1E-2	9.2E-2	0.0	6.6E-1	1.4E-1	1.0E-1	9.4E-2
E 17	6.2	2770	4.9E-1	4.9E-2	1.1E-1	0.0	6.4E-1	1.5E-1	1.1E-1	1.1E-1
F 22	6.0	2980	1.6E+0	5.8E-2	3.4E-1	0.0	2.0E+0	4.3E-1	3.6E-1	3.5E-1
F 30	6.8	2890	1.1E+0	5.5E-2	2.8E-1	0.0	1.5E+0	3.5E-1	2.9E-1	2.8E-1
G 15	6.7	3230	3.3E-1	2.9E-2	3.8E-1	0.0	7.4E-1	4.1E-1	3.8E-1	3.8E-1
G 20	9.2	2320	4.4E-1	2.5E-2	4.9E-1	0.0	1.0E+0	5.2E-1	4.9E-1	4.9E-1
H 11	9.4	1980	2.2E-1	1.0E-2	4.7E-1	0.0	7.0E-1	4.8E-1	4.7E-1	4.7E-1
I 09	5.9	2700	1.3E-1	1.9E-2	2.4E+1	0.0	2.4E+1	2.4E+1	2.4E+1	2.4E+1
I 18	7.8	1670	2.4E-1	2.4E-2	2.7E+0	2.5E+0	5.5E+0	5.2E+0	5.2E+0	5.2E+0
J 15	7.9	1550	6.6E-3	1.5E-2	1.7E+0	2.1E+0	3.8E+0	3.8E+0	3.7E+0	3.7E+0
J 16	8.9	2570	3.3E-3	1.4E-2	2.9E+0	2.2E+0	5.1E+0	5.1E+0	5.0E+0	5.0E+0
K 18	9.8	1280	1.2E-1	0.0	2.8E+0	1.4E+1	1.7E+1	1.7E+1	1.7E+1	1.7E+1
AVERAGES										
SPREADER, NO REINJ FROM D.C.			7.6E-1	4.6E-2	2.8E-1	0.0	1.1E+0	3.3E-1	2.9E-1	2.9E-1
MASS FIRED OVERFEED			1.2E-1	2.2E-2	4.9E+0	3.0E+0	8.0E+0	7.9E+0	7.9E+0	7.9E+0
HIGH			1.6E+0	6.3E-2	2.4E+1	1.4E+1	2.4E+1	2.4E+1	2.4E+1	2.4E+1
LOW			3.3E-3	1.0E-2	9.2E-2	2.1E+0	1.8E-1	4.2E-2	1.2E-3	2.6E-3

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

MERCURY

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210					9.2E-1			
A 35	6.0	3140					9.0E-1			
B 30	6.0	2710	4.8E-1	1.9E-1	6.6E-1	4.6E+0	5.9E+0	5.5E+0	5.3E+0	5.3E+0
B 31	6.0	2670	4.9E-1	6.6E-2	5.2E-1	3.8E+0	4.9E+0	4.4E+0	4.3E+0	4.3E+0
B 33	6.1	2130	4.4E-1	9.3E-2	3.6E-1	2.0E+0	2.9E+0	2.4E+0	2.3E+0	2.3E+0
C 44	8.9	4380	7.3E-1	2.6E-2	6.5E-1	1.4E+1	1.5E+1	1.5E+1	1.5E+1	1.5E+1
C 45	8.3	4360	4.1E-1	2.0E-2	4.1E-1	0.0	8.4E-1	4.6E-1	4.1E-1	4.1E-1
C 46	9.0	3230	3.5E-1	3.8E-2	1.7E+0	0.0	2.1E+0	1.8E+0	1.7E+0	1.7E+0
AVERAGE			3.6E-1	5.5E-2	5.4E-1	3.1E+0	4.2E+0	3.9E+0	3.8E+0	3.8E+0
HIGH			7.3E-1	1.9E-1	1.7E+0	1.4E+1	1.5E+1	1.5E+1	1.5E+1	1.5E+1
LOW			3.5E-1	2.0E-2	3.6E-1	2.0E+0	8.4E-1	4.6E-1	4.1E-1	4.1E-1

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	6.1E-3	3.3E-3	0.0	0.0	9.4E-3	2.0E-3	6.6E-5	1.4E-4
E 16	8.3	2760	2.0E-1	1.2E-2	1.0E+0	8.5E-1	2.0E+0	1.8E+0	1.8E+0	1.8E+0
E 17	6.2	2770	1.0E-1	1.0E-2	1.0E+0	3.5E-1	1.5E+0	1.4E+0	1.4E+0	1.4E+0
F 22	6.0	2980	5.8E-1	1.3E-1	1.7E+0	6.2E-1	3.1E+0	2.4E+0	2.4E+0	2.4E+0
F 33	6.8	2890	1.8E+0	2.7E-1	1.3E+0	1.0E+0	4.4E+0	2.5E+0	2.3E+0	2.3E+0
G 15	8.7	3230	4.9E-2	4.1E-2	1.9E-1	1.2E+0	1.5E+0	1.4E+0	1.4E+0	1.4E+0
G 20	9.2	2320	6.6E-2	4.3E-2	3.6E-1	5.6E+0	6.1E+0	6.0E+0	6.0E+0	6.0E+0
H 11	9.4	1980	5.6E-2	5.1E-3	1.1E+0	3.7E-1	1.5E+0	1.5E+0	1.5E+0	1.5E+0
I 09	5.9	2700	4.0E-2	2.3E-2	1.1E-3	2.3E+0	2.3E+0	2.3E+0	2.3E+0	2.3E+0
I 18	7.6	1670	3.9E-2	5.8E-2	4.0E-4	6.7E-1	7.7E-1	7.1E-1	6.7E-1	6.8E-1
J 15	7.9	1550	3.3E-3	3.0E-2	1.7E-4	1.3E+0	1.3E+0	1.3E+0	1.3E+0	1.3E+0
J 16	8.9	2570	2.0E-3	7.2E-2	2.9E-4	2.9E-1	3.6E-1	3.6E-1	2.9E-1	2.9E-1
K 18	9.8	1240	1.2E-2	7.9E-3	1.3E-1	1.7E+0	1.9E+0	1.8E+0	1.8E+0	1.8E+0
AVERAGES										
SPREADER,NO REINJ FROM D.C.			4.7E-1	8.4E-2	9.3E-1	1.6E+0	3.1E+0	2.6E+0	2.5E+0	2.5E+0
MASS FIRED OVERFEED			2.3E-2	2.8E-2	1.8E-1	9.4E-1	1.2E+0	1.1E+0	1.1E+0	1.1E+0
HIGH			1.8E+0	2.7E-1	1.7E+0	5.6E+0	6.1E+0	6.0E+0	6.0E+0	6.0E+0
LOW			2.0E-3	3.3E-3	1.7E-4	2.9E-1	9.4E-3	2.0E-3	6.6E-5	1.4E-4

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

THALLIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210					9.1E-1			
A 35	6.0	3140					1.0E+0			
B 30	6.0	2710	2.9E+0	2.6E+1	2.4E-1	5.6E+0	3.5E+1	2.6E+1	6.0E+0	5.9E+0
B 31	6.0	2670	1.9E+0	3.2E+1	2.2E-1	5.8E+0	4.0E+1	3.0E+1	6.3E+0	6.1E+0
B 33	6.1	2130	1.8E+0	3.6E+1	2.1E-1	6.0E+0	4.4E+1	3.4E+1	6.5E+0	6.3E+0
C 44	8.9	4380	2.9E+0	2.4E+1	5.0E-2	7.6E+0	3.5E+1	2.6E+1	7.9E+0	7.7E+0
C 45	8.3	4360	2.7E+0	6.1E+0	1.0E-1	7.7E+0	1.7E+1	1.3E+1	7.9E+0	7.8E+0
C 46	9.0	3230	1.2E+1	1.6E+1	1.0E-1	7.7E+0	3.5E+1	2.1E+1	8.0E+0	7.8E+0
AVERAGE			3.0E+0	1.8E+1	1.2E-1	5.1E+0	2.6E+1	1.9E+1	5.5E+0	5.4E+0
HIGH			1.2E+1	3.6E+1	2.4E-1	7.7E+0	4.4E+1	3.4E+1	8.0E+0	7.8E+0
LOW			1.8E+0	6.1E+0	5.0E-2	5.6E+0	9.1E-1	9.1E-1	9.1E-1	9.1E-1

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	4.6E+0	1.2E+2	0.0	0.0	1.2E+2	6.4E+1	8.5E-1	1.8E+0
E 16	8.3	2760	7.6E+0	1.8E+1	4.1E-1	0.0	2.6E+1	1.1E+1	6.0E-1	5.2E-1
E 17	6.2	2770	1.5E+1	1.5E+1	1.6E-1	0.0	2.9E+1	8.7E+0	3.6E-1	2.8E-1
F 22	6.0	2980	1.6E+1	2.9E+0	6.9E-1	0.0	2.0E+1	2.8E+0	8.2E-1	7.6E-1
F 30	6.8	2890	1.1E+1	1.6E+0	7.0E-1	0.0	1.4E+1	2.0E+0	7.9E-1	7.5E-1
G 15	8.7	3230	1.2E+1	4.3E+1	7.6E-1	0.0	5.6E+1	2.5E+1	1.1E+0	1.0E+0
G 20	9.2	2320	6.6E+0	3.8E-1	1.6E+0	0.0	8.6E+0	2.1E+0	1.7E+0	1.7E+0
H 11	9.4	1980	4.5E+1	1.5E+1	1.2E+0	0.0	6.1E+1	1.1E+1	1.6E+0	2.1E+0
I 09	5.9	2700	4.6E+1	9.4E+1	4.8E+1	0.0	1.9E+2	1.0E+2	4.9E+1	5.0E+1
I 18	7.8	1670	5.5E+0	1.4E+2	5.3E+0	8.4E+0	1.6E+2	9.0E+1	1.5E+1	1.6E+1
J 15	7.9	1550	6.6E-1	7.3E+1	3.9E+0	7.0E+0	8.4E+1	8.4E+1	1.1E+1	1.2E+1
J 16	8.9	2570	3.3E-1	7.1E+1	5.7E+0	7.2E+0	8.4E+1	8.4E+1	1.3E+1	1.4E+1
K 14	9.8	1280	1.2E+0	0.0	1.1E+1	5.7E+1	7.0E+1	6.8E+1	6.8E+1	6.8E+1
AVERAGES										
SPREADER,NO REINJ FROM D.C.			1.1E+1	1.4E+1	7.3E-1	0.0	2.6E+1	8.5E+0	9.0E-1	8.3E-1
MASS FIRED OVERFEED			1.5E+1	7.3E+1	1.1E+1	1.1E+1	1.1E+2	7.2E+1	2.3E+1	2.3E+1
HIGH			4.5E+1	1.4E+2	4.8E+1	5.7E+1	1.9E+2	1.0E+2	6.8E+1	6.8E+1
LOW			3.3E-1	3.8E-1	1.6E-1	7.0E+0	9.6E+0	2.0E+0	3.6E-1	2.8E-1

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

KVB 4-15910-564

LEAD

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210					3.5E+1			
A 35	6.0	3140					4.1E+1			
B 30	6.0	2710	9.6E+0	6.6E+2	2.4E+0	1.4E+1	6.9E+2	5.1E+2	2.1E+1	1.7E+1
B 31	6.0	2670	9.7E+0	8.0E+2	2.4E+0	1.5E+1	8.3E+2	6.2E+2	2.3E+1	1.8E+1
B 33	6.1	2130	1.8E+1	9.6E+2	2.3E+0	1.5E+1	1.0E+3	7.4E+2	2.4E+1	1.9E+1
C 44	8.9	4380	1.0E+2	2.0E+2	1.0E+0	0.0	3.0E+2	1.6E+2	3.1E+0	1.5E+0
C 45	8.3	4360	1.4E+1	1.1E+2	4.1E-1	0.0	1.3E+2	8.7E+1	1.3E+0	6.0E-1
C 46	9.0	3230	1.2E+2	1.1E+2	4.6E-1	0.0	2.2E+2	9.0E+1	2.0E+0	7.9E-1
AVERAGE			3.4E+1	3.6E+2	1.1E+0	5.5E+0	4.1E+2	2.9E+2	1.9E+1	1.7E+1
HIGH			1.2E+2	9.6E+2	2.4E+0	1.5E+1	1.0E+3	7.4E+2	4.1E+1	4.1E+1
LOW			9.6E+0	1.1E+2	4.1E-1	1.4E+1	3.5E+1	3.5E+1	1.3E+0	6.0E-1

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 10.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	1.5E+1	4.7E+2	0.0	0.0	4.8E+2	2.6E+2	3.4E+0	7.2E+0
E 16	8.3	2760	1.5E+1	9.1E+1	4.1E+0	0.0	1.1E+2	5.5E+1	4.9E+0	4.6E+0
E 17	6.2	2770	4.9E+1	7.3E+1	1.6E-1	0.0	1.2E+2	4.2E+1	1.0E+0	6.5E-1
F 22	6.0	2980	4.9E+1	2.9E+2	1.7E+0	0.0	3.4E+2	1.6E+2	4.1E+0	3.1E+0
F 30	6.8	2690	1.1E+1	1.6E+2	2.8E-1	0.0	1.8E+2	9.1E+1	1.5E+0	1.0E+0
G 15	8.7	3210	1.6E+2	1.4E+2	7.6E+0	0.0	3.2E+2	9.3E+1	9.8E+0	8.8E+0
G 20	9.2	2320	6.6E+1	8.8E+1	8.2E+0	0.0	1.6E+2	5.9E+1	9.2E+0	8.8E+0
H 11	9.4	1940	2.2E+2	3.1E+0	4.7E+0	0.0	2.3E+2	1.3E+1	6.3E+0	8.1E+0
I 09	5.9	2700	6.6E+1	2.8E+2	6.0E+1	0.0	4.1E+2	2.2E+2	6.2E+1	6.5E+1
I 18	7.8	1670	1.3E+1	5.6E+2	1.3E+1	2.5E-2	5.8E+2	3.2E+2	1.7E+1	2.2E+1
J 15	7.9	1550	2.3E+1	1.5E+3	1.1E+1	4.2E+0	1.5E+3	1.5E+3	2.6E+1	3.7E+1
J 16	8.9	2570	5.0E+0	1.4E+3	1.1E+1	7.2E+0	1.4E+3	1.4E+3	2.9E+1	4.0E+1
K 18	9.8	1280	4.9E+0	0.0	5.7E+0	2.9E+1	3.9E+1	3.4E+1	3.4E+1	3.4E+1
AVERAGES										
SPREADER,NO REINJ FROM D.C.			9.9E+1	1.4E+2	3.7E+0	0.0	2.0E+2	8.3E+1	5.1E+0	4.5E+0
MASS FIRED OVERFEED			5.0E+1	6.0E+2	1.5E+1	5.7E+0	6.7E+2	5.4E+2	2.5E+1	3.1E+1
HIGH			2.2E+2	1.5E+3	6.0E+1	2.9E+1	1.5E+3	1.5E+3	6.2E+1	6.5E+1
LOW			4.9E+0	3.1E+0	1.6E-1	2.5E-2	3.9E+1	1.3E+1	1.0E+0	6.5E-1

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

BISMUTH

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS - µG/DRY SCM: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210					2.8E+1			
A 35	6.8	3140					2.5E+1			
B 32	6.0	2710	1.0E+0	1.3E+1	1.6E-1	5.6E+0	2.0E+1	1.6E+1	5.8E+0	5.8E+0
B 31	6.0	2670	1.0E+0	1.6E+1	1.6E-1	5.8E+0	2.3E+1	1.8E+1	6.1E+0	6.0E+0
B 33	6.1	2130	1.8E+0	2.4E+1	1.6E-1	6.0E+0	3.2E+1	2.4E+1	6.4E+0	6.2E+0
C 44	8.9	4380	1.5E+0	2.1E+0	2.5E-2	0.0	3.6E+0	1.8E+0	5.0E-2	3.1E-2
C 45	8.3	4360	2.7E+0	1.2E+0	2.5E-2	0.0	4.0E+0	1.2E+0	5.3E-2	3.1E-2
C 46	9.0	3230	1.2E+0	9.5E-1	2.5E-2	0.0	2.1E+0	8.4E-1	4.0E-2	2.9E-2
AVERAGE			1.1E+0	7.2E+0	7.0E-2	2.2E+0	1.7E+1	1.4E+1	8.9E+0	8.8E+0
HIGH			2.7E+0	2.4E+1	1.6E-1	6.0E+0	3.2E+1	2.8E+1	2.8E+1	2.8E+1
LOW			1.0E+0	9.5E-1	2.5E-2	5.6E+0	2.1E+0	8.4E-1	4.0E-2	2.9E-2

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS - µG/DRY SCM: 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	13.2	2070	4.6E-1	1.7E+1	0.0	0.0	1.8E+1	9.6E+0	1.3E-1	2.7E-1
E 16	8.3	2760	2.5E-1	9.1E-1	4.1E-2	0.0	1.2E+0	5.5E-1	5.0E-2	4.6E-2
E 17	6.2	2770	2.4E-1	2.4E-1	1.1E-1	0.0	5.9E-1	2.5E-1	1.1E-1	1.1E-1
F 22	6.0	2980	8.2E-1	8.6E-1	6.9E-1	0.0	2.4E+0	1.2E+0	7.0E-1	6.9E-1
F 30	6.8	2890	1.7E+0	2.7E-1	2.1E-1	0.0	2.2E+0	4.2E-1	2.2E-1	2.2E-1
G 15	8.7	3230	8.2E-1	2.9E+0	3.8E-1	0.0	4.1E+0	2.0E+0	4.1E-1	4.0E-1
G 20	9.2	2320	1.1E+0	2.5E+0	3.3E-1	0.0	4.0E+0	1.8E+0	3.5E-1	3.4E-1
H 11	9.4	1480	1.0E+0	3.1E-1	4.7E-1	0.0	1.8E+0	6.7E-1	4.8E-1	4.9E-1
I 09	5.9	2790	5.3E-1	7.6E-1	2.4E+1	0.0	2.5E+1	2.4E+1	2.4E+1	2.4E+1
I 18	7.8	1670	1.6E-1	2.4E+0	2.7E+0	2.5E+0	8.1E+0	6.7E+0	5.2E+0	5.2E+0
J 15	7.9	1550	2.7E-2	3.6E+0	1.7E+0	2.1E+0	7.4E+0	7.4E+0	3.8E+0	3.8E+0
J 16	8.9	2570	3.3E-3	1.4E+0	2.9E+0	2.2E+0	6.5E+0	6.5E+0	5.0E+0	5.1E+0
K 18	9.8	1260	2.5E-1	0.0	2.8E+0	1.4E+1	1.7E+1	1.7E+1	1.7E+1	1.7E+1
AVERAGES										
SPREADER,NO REINJ FROM D.C.			8.3E-1	1.3E+0	2.9E-1	0.0	2.4E+0	1.0E+0	3.1E-1	3.0E-1
MASS FIRED OVERFEED			3.5E-1	3.9E+0	4.9E+0	3.0E+0	1.2E+1	1.0E+1	7.9E+0	8.0E+0
HIGH			1.7E+0	1.7E+1	2.4E+1	1.4E+1	2.5E+1	2.4E+1	2.4E+1	2.4E+1
LOW			3.3E-3	2.4E-1	4.1E-2	2.1E+0	5.9E-1	2.5E-1	5.0E-2	4.6E-2

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

THORIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	1.9E+0	8.8E-1	1.6E-1	5.6E+0	8.6E+0	6.6E+0	5.8E+0	5.8E+0
B 31	6.0	2670	3.9E+0	9.5E-1	1.6E-1	5.8E+0	1.1E+1	7.0E+0	6.0E+0	6.0E+0
B 33	6.1	2130	8.8E+0	3.7E+0	1.6E-1	6.0E+0	1.9E+1	9.7E+0	6.3E+0	6.2E+0
C 44	8.9	4380	2.9E+1	1.7E+0	5.0E-2	0.0	3.1E+1	3.9E+0	2.7E-1	1.0E-1
C 45	8.3	4360	2.7E+1	1.4E+0	5.1E-2	0.0	2.9E+1	3.5E+0	2.5E-1	9.4E-2
C 46	9.0	3230	1.2E+1	8.0E-1	5.1E-2	0.0	1.3E+1	1.7E+0	1.4E-1	6.9E-2
AVERAGE			1.4E+1	1.6E+0	1.1E-1	2.9E+0	1.8E+1	5.4E+0	3.1E+0	3.0E+0
HIGH			2.9E+1	3.7E+0	1.6E-1	6.0E+0	3.1E+1	9.7E+0	6.3E+0	6.2E+0
LOW			1.3E+0	8.0E-1	5.0E-2	5.6E+0	8.6E+0	1.7E+0	1.4E-1	6.9E-2

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	1.5E+0	7.0E-1	0.0	0.0	2.2E+0	4.4E-1	1.6E-2	3.3E-2
E 16	8.3	2760	1.0E+1	9.1E-1	9.2E-2	0.0	1.1E+1	9.2E-1	1.7E-1	1.4E-1
E 17	6.2	2770	4.9E+0	7.3E+0	1.6E-1	0.0	1.2E+1	4.3E+0	2.5E-1	2.1E-1
F 22	6.0	2980	3.3E+1	8.6E-1	6.9E-1	0.0	3.4E+1	2.2E+0	9.2E-1	8.2E-1
F 30	6.8	2890	1.7E+1	5.5E-1	3.5E-1	0.0	1.8E+1	1.2E+0	4.7E-1	4.2E-1
G 15	8.7	3230	1.6E+1	7.2E-1	7.6E-1	0.0	1.8E+1	1.7E+0	8.8E-1	8.3E-1
G 20	9.2	2320	1.1E+1	3.8E+0	6.6E-1	0.0	1.5E+1	3.1E+0	7.6E-1	7.1E-1
H 11	9.4	1940	4.5E+0	2.1E-1	1.2E+0	0.0	5.8E+0	1.4E+0	1.2E+0	1.2E+0
I 09	5.9	2700	1.3E+1	4.7E-1	4.8E+1	0.0	6.1E+1	4.8E+1	4.8E+1	4.8E+1
I 18	7.8	1670	7.9E+0	4.2E-1	5.3E+0	5.1E+0	1.9E+1	1.1E+1	1.0E+1	1.1E+1
J 15	7.9	1550	1.7E+0	3.6E-1	3.9E+0	4.2E+0	1.0E+1	1.0E+1	8.1E+0	8.1E+0
J 16	8.9	2570	8.3E-1	3.5E-1	5.7E+0	4.3E+0	1.1E+1	1.1E+1	1.0E+1	1.0E+1
K 18	9.8	1280	6.2E-1	0.0	5.7E+0	2.9E+1	3.5E+1	3.4E+1	3.4E+1	3.4E+1
AVERAGES										
SPREADER,NO REINJ FROM D.C.			1.5E+1	2.4E+0	4.5E-1	0.0	1.8E+1	2.2E+0	5.8E-1	5.2E-1
MASS FIRED OVERFEED			4.3E+0	3.6E-1	9.9E+0	6.0E+0	2.1E+1	1.7E+1	1.6E+1	1.6E+1
HIGH			3.3E+1	7.3E+0	4.8E+1	2.9E+1	6.1E+1	4.8E+1	4.8E+1	4.8E+1
LOW			6.2E-1	2.1E-1	9.2E-2	4.2E+0	2.2E+0	4.4E-1	1.6E-2	3.3E-2

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

URANIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	1.9E+0	3.1E+0	1.6E-1	5.6E+0	1.1E+1	8.2E+0	5.8E+0	5.8E+0
B 31	6.0	2670	3.9E+0	6.4E+0	1.6E-1	5.8E+0	1.6E+1	1.1E+1	6.1E+0	6.0E+0
B 33	6.1	2130	8.8E+0	1.5E+1	1.6E-1	6.0E+0	3.0E+1	1.8E+1	6.4E+0	6.2E+0
C 44	8.9	4380	2.9E+1	2.1E+0	5.0E-2	0.0	3.1E+1	4.2E+0	2.7E-1	1.0E-1
C 45	8.3	4360	1.4E+1	1.5E+0	5.1E-2	0.0	1.5E+1	2.4E+0	1.6E-1	7.3E-2
C 46	9.0	3230	1.2E+1	1.4E+0	5.1E-2	0.0	1.3E+1	2.1E+0	1.4E-1	7.0E-2
AVERAGE			1.2E+1	5.0E+0	1.1E-1	2.9E+0	1.9E+1	7.7E+0	3.1E+0	3.0E+0
HIGH			2.9E+1	1.5E+1	1.6E-1	6.0E+0	3.1E+1	1.8E+1	6.4E+0	6.2E+0
LOW			1.9E+0	1.4E+0	5.0E-2	5.6E+0	1.1E+1	2.1E+0	1.4E-1	7.0E-2

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - µG/DRY SCM* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	3.0E+0	6.4E+0	0.0	0.0	9.5E+0	3.6E+0	6.6E-2	1.4E-1
E 16	8.3	2760	1.0E+1	1.2E+1	4.1E-2	0.0	2.2E+1	7.1E+0	2.0E-1	1.3E-1
E 17	6.2	2770	4.9E+0	9.7E+0	5.3E-2	0.0	1.5E+1	5.6E+0	1.6E-1	1.1E-1
F 22	6.0	2980	3.3E+1	8.6E+0	3.4E-1	0.0	4.2E+1	6.1E+0	6.3E-1	5.1E-1
F 30	6.8	2890	1.7E+1	1.1E+0	1.4E-1	0.0	1.8E+1	1.3E+0	2.7E-1	2.1E-1
G 15	8.7	3230	8.2E+0	7.2E+0	3.8E-1	0.0	1.6E+1	4.6E+0	4.9E-1	4.4E-1
G 20	9.2	2320	1.1E+1	2.5E+1	3.3E-1	0.0	3.7E+1	1.5E+1	5.8E-1	4.7E-1
H 11	9.4	1980	4.5E+0	1.5E+0	4.7E-1	0.0	6.5E+0	1.5E+0	5.1E-1	5.6E-1
I 09	5.9	2700	1.3E+1	2.8E+0	2.4E+1	0.0	4.0E+1	2.6E+1	2.4E+1	2.4E+1
I 18	7.8	1670	2.4E+1	4.2E+0	2.7E+0	2.5E+0	3.3E+1	8.2E+0	5.4E+0	5.6E+0
J 15	7.9	1550	6.6E-1	3.6E+0	1.7E+0	2.1E+0	8.0E+0	8.0E+0	3.8E+0	3.8E+0
J 16	8.9	2570	8.3E-1	2.1E+0	2.9E+0	2.2E+0	8.0E+0	8.0E+0	5.1E+0	5.1E+0
K 18	9.8	1280	6.2E-1	0.0	2.8E+0	1.4E+1	1.8E+1	1.7E+1	1.7E+1	1.7E+1
AVERAGES										
SPREADER,NO REINJ FROM D.C.			1.4E+1	1.1E+1	2.1E-1	0.0	2.5E+1	6.5E+0	3.9E-1	3.1E-1
MASS FIRED OVERFEED			6.6E+0	3.0E+0	4.9E+0	3.0E+0	1.7E+1	1.0E+1	8.0E+0	8.1E+0
HIGH			3.3E+1	2.5E+1	2.4E+1	1.4E+1	4.2E+1	2.6E+1	2.4E+1	2.4E+1
LOW			6.2E-1	1.1E+0	4.1E-2	2.1E+0	6.5E+0	1.3E+0	6.6E-2	1.1E-1

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

PHENANTHRENE

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	*- - - E M I S S I O N S - µG/DRY SCM - - - - -* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
A 27	4.2	20.0	14500	9.3E-2	1.8E+0	5.6E-2	1.1E-1	3.4E+0	5.5E+0	4.9E+0	3.6E+0	3.6E+0
A 40	6.9	28.0	14300	0.0	4.1E-1	4.6E-2	1.2E-3	3.1E-1	7.7E-1	6.7E-1	3.6E-1	3.6E-1
B 30	6.0	10.0	10600	3.2E+0	8.4E-2	3.1E-1	1.5E+1	2.2E-1	1.9E+1	1.6E+1	1.6E+1	1.6E+1
B 31	6.0	9.0	11200	2.7E+0	1.1E-1	2.8E-1	1.2E+0	2.8E-1	4.5E+0	2.1E+0	1.8E+0	1.8E+0
B 33	6.1	8.0	11100	2.7E+0	3.1E-1	2.2E-1	1.4E+1	0.0	1.7E+1	1.5E+1	1.4E+1	1.4E+1
C 44	8.9	16.0	15000	2.5E-2	2.5E-2	4.5E-2	8.6E+0	5.5E-2	8.7E+0	8.7E+0	8.7E+0	8.7E+0
C 45	8.3	15.0	14500	2.5E-2	2.5E-2	5.6E-2	1.9E+1	3.0E-2	1.9E+1	1.9E+1	1.9E+1	1.9E+1
C 46	9.0	16.0	11900	3.0E-2	2.5E-2	3.6E-2	1.5E+0	7.6E-2	1.7E+0	1.7E+0	1.6E+0	1.6E+0
AVERAGE				1.1E+0	3.5E-1	1.3E-1	7.5E+0	5.5E-1	9.6E+0	8.5E+0	8.2E+0	8.1E+0
HIGH				3.2E+0	1.8E+0	3.1E-1	1.9E+1	3.4E+0	1.9E+1	1.9E+1	1.9E+1	1.9E+1
LOW				2.5E-2	2.5E-2	3.6E-2	1.2E-3	3.0E-2	7.7E-1	6.7E-1	3.6E-1	3.6E-1

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	*- - - E M I S S I O N S - µG/DRY SCM - - - - -* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	13.2	4.1	12000	2.9E-2	3.5E-2	0.0	5.8E+1	6.4E-1	5.9E+1	5.9E+1	5.9E+1	5.9E+1
E 16	8.3	13.5	11700	4.6E-2	1.2E-1	2.3E-2	1.9E+0	6.9E-2	2.1E+0	2.0E+0	2.0E+0	2.0E+0
E 17	6.2	12.4	11600	1.0E-1	8.5E-2	2.7E-2	2.3E+0	3.2E-2	2.6E+0	2.5E+0	2.4E+0	2.4E+0
F 22	6.0	10.9	7400	8.6E-2	1.9E-1	3.3E-1	3.7E-1	1.7E-1	1.1E+0	1.0E+0	8.7E-1	8.7E-1
F 30	6.8	12.3	8000	8.4E-2	1.0E-1	3.5E-2	2.6E+1	3.5E-2	2.6E+1	2.6E+1	2.6E+1	2.6E+1
G 15	8.7	15.2	11900	2.8E-2	3.4E-2	2.8E-2	4.4E-1	1.5E-1	6.8E-1	6.4E-1	6.2E-1	6.2E-1
G 20	9.2	9.6	12200	2.8E-2	3.9E-2	2.8E-2	1.6E-1	1.2E-1	3.7E-1	3.3E-1	3.1E-1	3.1E-1
H 11	9.4	6.8	13500	5.8E-2	2.3E-2	2.9E-2	3.5E-2	6.4E-2	2.1E-1	1.4E-1	1.3E-1	1.3E-1
I 09	5.9	10.1	12300	3.6E-2	3.0E-2	3.0E-2	4.3E-1	2.6E-1	7.9E-1	7.4E-1	7.3E-1	7.3E-1
I 18	7.8	4.7	12100	3.3E-2	3.3E-2	3.3E-2	5.0E-1	1.1E-1	7.1E-1	6.7E-1	6.5E-1	6.5E-1
J 15	7.9	3.0	12200	2.8E-2	5.5E-2	2.8E-2	3.0E+0	8.8E-2	3.2E+0	3.2E+0	3.1E+0	3.1E+0
J 16	8.9	8.2	12600	2.9E-2	2.9E-2	2.9E-2	1.3E+0	1.0E-1	1.5E+0	1.5E+0	1.4E+0	1.4E+0
K 18	9.8	6.0	12200	0.0	7.4E-2	0.0	1.9E-1	3.4E-2	3.0E-1	2.7E-1	2.3E-1	2.3E-1
AVERAGES												
SPREADER, NO REINJ FROM D.C.				6.1E-2	9.4E-2	7.8E-2	5.2E+0	1.0E-1	5.5E+0	5.4E+0	5.4E+0	5.4E+0
MASS FIRED OVERFEED				3.0E-2	4.0E-2	2.1E-2	9.1E+0	1.9E-1	9.4E+0	9.3E+0	9.3E+0	9.3E+0
HIGH				1.0E-1	1.9E-1	3.3E-1	5.8E+1	6.4E-1	5.9E+1	5.9E+1	5.9E+1	5.9E+1
LOW				2.8E-2	2.3E-2	2.3E-2	3.5E-2	3.2E-2	2.1E-1	1.4E-1	1.3E-1	1.3E-1

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

ANTHRACENE

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	EMISSIONS - µG/DRY SCM: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	10.0	10600	0.0	2.8E-2	0.0	2.6E-1	5.0E-2	3.4E-1	3.3E-1	3.1E-1	3.1E-1
B 31	6.0	9.0	11200	0.0	0.0	2.7E-2	1.4E-1	4.4E-2	2.1E-1	2.1E-1	2.1E-1	2.1E-1
B 33	6.1	8.0	11100	0.0	0.0	2.7E-2	2.8E-1	0.0	3.1E-1	3.1E-1	3.1E-1	3.1E-1
C 44	4.9	16.0	15200	0.0	0.0	0.0	5.8E-1	0.0	5.8E-1	5.8E-1	5.8E-1	5.8E-1
C 45	8.3	15.0	14500	0.0	0.0	0.0	3.6E-2	0.0	3.6E-2	3.6E-2	3.6E-2	3.6E-2
C 46	9.0	16.0	11900	0.0	0.0	0.0	2.3E-1	2.5E-2	2.5E-1	2.5E-1	2.5E-1	2.5E-1
AVERAGE				0.0	4.7E-3	9.0E-3	2.5E-1	2.0E-2	2.9E-1	2.9E-1	2.8E-1	2.8E-1
HIGH					2.8E-2	2.7E-2	5.8E-1	5.0E-2	5.8E-1	5.8E-1	5.8E-1	5.8E-1
LOW					2.8E-2	2.7E-2	3.6E-2	2.5E-2	3.6E-2	3.6E-2	3.6E-2	3.6E-2

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	EMISSIONS - µG/DRY SCM: 10.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	4.1	12000	2.9E-2	2.9E-2	0.0	5.8E+1	3.5E-2	5.8E+1	5.8E+1	5.8E+1	5.8E+1
E 16	8.3	13.5	11700	4.6E-2	4.6E-2	2.3E-2	4.6E-2	2.3E-2	1.8E-1	1.2E-1	9.3E-2	9.2E-2
E 17	6.2	12.4	11600	5.3E-2	5.3E-2	2.7E-2	4.8E-2	2.7E-2	2.1E-1	1.3E-1	1.0E-1	1.0E-1
F 22	6.8	10.9	7400	8.6E-2	8.6E-2	0.0	1.5E-1	4.3E-2	3.6E-1	2.4E-1	1.9E-1	1.9E-1
F 30	6.8	12.3	8000	7.0E-2	7.0E-2	3.5E-2	0.0	3.5E-2	2.1E-1	1.1E-1	7.1E-2	7.0E-2
G 15	8.7	15.2	11900	0.0	0.0	0.0	7.3E-2	2.8E-2	1.0E-1	1.0E-1	1.0E-1	1.0E-1
G 20	9.2	9.6	12200	0.0	2.8E-2	0.0	4.4E-2	2.8E-2	1.0E-1	8.8E-2	7.2E-2	7.2E-2
H 11	9.4	6.8	13500	5.8E-2	2.9E-2	2.9E-2	2.9E-2	2.9E-2	1.8E-1	1.1E-1	8.6E-2	8.9E-2
I 09	5.9	10.1	12300	0.0	0.0	0.0	8.9E-2	3.0E-2	1.2E-1	1.2E-1	1.2E-1	1.2E-1
I 18	7.8	4.7	12100	0.0	0.0	0.0	1.3E-1	3.3E-2	1.6E-1	1.6E-1	1.6E-1	1.6E-1
J 15	7.9	3.0	12200	2.8E-2	2.8E-2	0.0	2.2E-1	4.4E-2	3.1E-1	3.1E-1	2.6E-1	2.6E-1
J 16	8.9	8.2	12600	0.0	0.0	0.0	3.0E-1	2.9E-2	3.3E-1	3.3E-1	3.3E-1	3.3E-1
K 18	9.8	6.0	12200	0.0	2.8E-2	0.0	3.4E-2	0.0	6.2E-2	5.0E-2	3.4E-2	3.4E-2
AVERAGES												
SPREADER, NO REINJ FROM D.C.				4.3E-2	4.7E-2	1.4E-2	6.0E-2	3.1E-2	1.9E-1	1.3E-1	1.0E-1	1.0E-1
MASS FIRED OVERFEED				1.6E-2	1.6E-2	4.2E-3	8.4E+0	2.9E-2	8.5E+0	8.5E+0	8.4E+0	8.4E+0
HIGH				8.6E-2	8.6E-2	3.5E-2	5.8E+1	4.4E-2	5.8E+1	5.8E+1	5.8E+1	5.8E+1
LOW				2.8E-2	2.8E-2	2.3E-2	2.9E-2	2.3E-2	6.2E-2	5.0E-2	3.4E-2	3.4E-2

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

METHYLANTHRACENES/PHENANTHRENES

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	EMISSIONS - UG/DRY SCM: 10 UM + 3 UM CYCLONE	1 UM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
A 27	4.2	20.0	14500	0.0	2.2E-1	0.0	7.1E-3	3.0E-1	5.3E-1	4.7E-1	3.1E-1	3.1E-1
A 40	6.9	28.0	14300	0.0	5.8E-2	8.5E-2	0.0	8.1E-2	2.2E-1	2.1E-1	1.7E-1	1.7E-1
B 30	6.0	10.0	10600	7.3E-1	2.8E-2	2.8E-2	0.0	0.0	7.8E-1	1.1E-1	3.3E-2	2.9E-2
B 31	6.0	9.0	11200	4.4E-1	0.0	1.4E-1	9.3E-2	5.4E-2	7.2E-1	3.3E-1	2.9E-1	2.9E-1
B 33	6.1	8.0	11100	3.9E-1	0.0	8.0E-2	0.0	0.0	4.7E-1	1.1E-1	8.3E-2	8.1E-2
C 44	8.9	16.0	15000	0.0	0.0	2.5E-2	1.7E+0	2.5E-2	1.7E+0	1.7E+0	1.7E+0	1.7E+0
C 45	8.3	15.0	14500	0.0	0.0	5.6E-2	0.0	0.0	5.6E-2	5.6E-2	5.6E-2	5.6E-2
C 46	9.0	16.0	11900	0.0	0.0	2.5E-2	6.4E-1	3.6E-2	7.1E-1	7.1E-1	7.1E-1	7.1E-1
AVERAGE				1.9E-1	3.8E-2	5.5E-2	3.1E-1	6.2E-2	6.6E-1	4.7E-1	4.2E-1	4.2E-1
HIGH				7.3E-1	2.2E-1	1.4E-1	1.7E+0	3.0E-1	1.7E+0	1.7E+0	1.7E+0	1.7E+0
LOW				3.9E-1	2.8E-2	2.5E-2	7.1E-3	2.5E-2	5.6E-2	5.6E-2	3.3E-2	2.9E-2

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	EMISSIONS - UG/DRY SCM: 18.5 UM +5.9 UM CYCLONE	1.4 UM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	4.1	12000	0.0	0.0	0.0	1.9E+0	3.5E-1	2.2E+0	2.2E+0	2.2E+0	2.2E+0
E 16	8.3	13.5	11700	0.0	5.5E-2	2.3E-2	5.1E-1	4.1E-2	6.3E-1	6.0E-1	5.7E-1	5.7E-1
E 17	6.2	12.4	11600	0.0	0.0	0.0	6.9E-1	0.0	6.9E-1	6.9E-1	6.9E-1	6.9E-1
F 22	6.0	10.9	7400	0.0	1.0E-1	0.0	2.8E-1	1.5E-1	5.3E-1	4.9E-1	4.3E-1	4.3E-1
F 30	6.8	12.3	8000	0.0	0.0	0.0	1.3E+1	0.0	1.3E+1	1.3E+1	1.3E+1	1.3E+1
G 15	8.7	15.2	11900	2.8E-2	2.8E-2	2.8E-2	1.7E-1	6.8E-2	3.3E-1	2.9E-1	2.7E-1	2.7E-1
G 20	9.2	9.6	12200	0.0	2.8E-2	0.0	6.7E-2	5.6E-2	1.5E-1	1.4E-1	1.2E-1	1.2E-1
I 09	5.9	10.1	12300	3.0E-2	0.0	3.0E-2	8.9E-2	1.5E-1	3.0E-1	2.7E-1	2.7E-1	2.7E-1
I 18	7.8	4.7	12100	3.3E-2	3.3E-2	3.3E-2	1.8E-1	6.0E-2	3.4E-1	2.9E-1	2.7E-1	2.7E-1
J 15	7.9	3.0	12200	2.8E-2	2.8E-2	2.8E-2	1.0E+0	7.2E-2	1.1E+0	1.1E+0	1.1E+0	1.1E+0
J 16	8.9	8.2	12600	2.9E-2	2.9E-2	2.9E-2	6.3E-1	6.9E-2	7.9E-1	7.9E-1	7.3E-1	7.3E-1
K 18	9.8	6.0	12200	0.0	2.8E-2	0.0	1.8E-1	2.8E-2	2.3E-1	2.2E-1	2.0E-1	2.0E-1
AVERAGES												
SPREADER, NO REINJ FROM D.C.				4.7E-3	3.6E-2	8.5E-3	2.5E+0	5.2E-2	2.6E+0	2.6E+0	2.6E+0	2.6E+0
MASS FIRED OVERFEED				2.0E-2	2.0E-2	2.0E-2	6.6E-1	1.2E-1	8.4E-1	8.3E-1	8.0E-1	8.0E-1
HIGH				3.3E-2	1.0E-1	3.3E-2	1.3E+1	3.5E-1	1.3E+1	1.3E+1	1.3E+1	1.3E+1
LOW				2.8E-2	2.8E-2	2.3E-2	6.7E-2	2.8E-2	1.5E-1	1.4E-1	1.2E-1	1.2E-1

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

FLUORANTHENE

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	EMISSIONS - µG/DRY SCM: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
A 27	4.2	20.0	14500	3.4E-2	7.5E-1	2.1E-1	7.8E-2	1.6E-1	1.2E+0	1.0E+0	4.5E-1	4.5E-1
A 40	6.9	26.0	14300	0.0	1.3E-2	1.9E-2	0.0	3.5E-2	6.7E-2	6.4E-2	5.4E-2	5.4E-2
B 30	6.0	10.0	10600	4.3E+0	2.8E-2	2.8E-2	1.7E-1	5.6E-2	4.5E+0	6.5E-1	2.8E-1	2.6E-1
B 31	6.0	9.0	11200	1.6E+0	0.0	3.4E-1	1.3E+0	1.7E-1	3.5E+0	2.0E+0	1.8E+0	1.8E+0
B 33	6.1	8.0	11100	3.1E+0	3.2E-2	2.5E-1	5.3E-2	3.0E-1	3.7E+0	9.0E-1	6.2E-1	6.1E-1
C 44	8.9	16.0	15000	2.5E-2	2.5E-2	2.5E-2	5.0E+0	2.5E-2	5.1E+0	5.1E+0	5.0E+0	5.0E+0
C 45	8.3	15.0	14500	2.5E-2	2.5E-2	2.5E-2	9.1E-1	2.5E-2	1.0E+0	1.0E+0	1.0E+0	1.0E+0
C 46	9.0	16.0	11900	2.5E-2	2.5E-2	3.0E-2	7.1E-1	3.0E-2	8.2E-1	7.9E-1	7.7E-1	7.7E-1
AVERAGE				1.1E+0	1.1E-1	1.2E-1	1.0E+0	1.0E-1	2.5E+0	1.4E+0	1.3E+0	1.2E+0
HIGH				4.3E+0	7.5E-1	3.4E-1	5.0E+0	3.0E-1	5.1E+0	5.1E+0	5.0E+0	5.0E+0
LOW				2.5E-2	1.3E-2	1.9E-2	5.3E-2	2.5E-2	6.7E-2	6.4E-2	5.4E-2	5.4E-2

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	EMISSIONS - µG/DRY SCM: 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	4.1	12000	2.9E-2	2.9E-2	7.0E-2	5.8E+1	1.0E-1	5.8E+1	5.8E+1	5.8E+1	5.8E+1
E 16	8.3	13.5	11700	4.6E-2	4.6E-2	2.3E-2	2.2E-1	3.2E-2	3.6E-1	3.0E-1	2.7E-1	2.7E-1
E 17	6.2	12.4	11600	5.3E-2	5.3E-2	2.7E-2	3.4E-1	2.7E-2	5.0E-1	4.2E-1	3.9E-1	3.9E-1
F 22	6.0	10.9	7400	8.6E-2	8.6E-2	4.3E-2	1.4E-1	9.4E-2	4.5E-1	3.2E-1	2.8E-1	2.8E-1
F 30	6.8	12.3	8000	7.0E-2	7.0E-2	0.0	5.6E+0	3.5E-2	5.8E+0	5.7E+0	5.7E+0	5.7E+0
G 15	8.7	15.2	11900	0.0	0.0	0.0	7.9E-2	2.8E-2	1.1E-1	1.1E-1	1.1E-1	1.1E-1
G 20	9.2	9.6	12200	2.8E-2	0.0	0.0	3.3E-2	2.8E-2	8.9E-2	6.2E-2	6.1E-2	6.1E-2
H 11	9.4	6.8	13500	5.6E-2	2.9E-2	2.9E-2	0.0	6.4E-2	1.8E-1	1.1E-1	9.4E-2	9.5E-2
I 09	5.9	10.1	12300	0.0	0.0	0.0	3.6E-2	3.0E-2	6.5E-2	6.5E-2	6.5E-2	6.5E-2
I 18	7.8	4.7	12100	0.0	0.0	0.0	1.6E-1	3.3E-2	1.9E-1	1.9E-1	1.9E-1	1.9E-1
J 15	7.9	3.0	12200	0.0	2.8E-2	0.0	6.1E-1	2.8E-2	6.6E-1	6.6E-1	6.4E-1	6.4E-1
J 16	8.9	8.2	12600	0.0	0.0	0.0	5.2E-1	2.9E-2	5.5E-1	5.5E-1	5.5E-1	5.5E-1
K 18	9.8	6.0	12200	2.8E-2	2.8E-2	2.8E-2	7.4E-2	2.8E-2	1.9E-1	1.5E-1	1.3E-1	1.3E-1
AVERAGES												
SPREADER,NO REINJ FROM D.C.				4.7E-2	4.3E-2	1.5E-2	1.1E+0	4.1E-2	1.2E+0	1.2E+0	1.1E+0	1.1E+0
MASS FIRED OVERFEED				1.7E-2	1.6E-2	1.8E-2	8.5E+0	4.4E-2	8.6E+0	8.6E+0	8.6E+0	8.6E+0
HIGH				8.6E-2	8.6E-2	7.0E-2	5.8E+1	1.0E-1	5.8E+1	5.8E+1	5.8E+1	5.8E+1
LOW				2.8E-2	2.8E-2	2.3E-2	3.3E-2	2.7E-2	6.5E-2	6.2E-2	6.1E-2	6.1E-2

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

PYRENE

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	EMISSIONS - µG/DRY SCM: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
A 27	4.2	20.0	14500	9.2E-2	4.9E-1	6.1E-1	1.9E-1	1.5E-1	1.5E+0	1.3E+0	1.0E+0	9.5E-1
A 40	6.9	28.0	14300	0.0	1.0E-2	4.7E-2	0.0	3.3E-2	9.0E-2	8.8E-2	8.0E-2	8.0E-2
B 30	6.0	10.0	13600	5.6E-1	2.8E-2	2.8E-2	5.0E-2	2.8E-2	6.9E-1	1.8E-1	1.1E-1	1.1E-1
B 31	6.0	9.0	11200	4.4E-1	0.0	2.2E-1	2.6E-1	2.8E-1	1.2E+0	8.0E-1	7.7E-1	7.6E-1
B 33	6.1	8.0	11100	8.0E-1	2.7E-2	1.6E-1	4.8E-2	2.7E-2	1.1E+0	3.3E-1	2.4E-1	2.4E-1
C 44	8.9	16.0	15000	2.5E-2	2.5E-2	2.5E-2	1.3E+0	2.5E-2	1.4E+0	1.4E+0	1.4E+0	1.4E+0
C 45	8.3	15.0	14500	2.5E-2	2.5E-2	0.0	1.5E-2	2.5E-2	9.1E-2	6.2E-2	4.1E-2	4.1E-2
C 46	9.0	16.0	11900	0.0	2.5E-2	2.5E-2	6.4E-1	3.6E-2	7.3E-1	7.2E-1	7.1E-1	7.1E-1
AVERAGE				2.4E-1	7.9E-2	1.4E-1	3.2E-1	7.5E-2	8.6E-1	6.1E-1	5.4E-1	5.3E-1
HIGH				8.0E-1	4.9E-1	6.1E-1	1.3E+0	2.8E-1	1.5E+0	1.4E+0	1.4E+0	1.4E+0
LOW				2.5E-2	1.0E-2	2.5E-2	1.5E-2	2.5E-2	9.0E-2	6.2E-2	4.1E-2	4.1E-2

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	EMISSIONS - µG/DRY SCM: 10.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	4.1	12000	2.9E-2	2.9E-2	0.0	4.5E-1	1.9E-1	7.8E-1	6.6E-1	6.4E-1	6.4E-1
E 16	8.3	13.5	11700	6.4E-2	4.6E-2	2.3E-2	2.0E-1	5.1E-2	3.9E-1	3.0E-1	2.8E-1	2.8E-1
E 17	6.2	12.4	11600	5.3E-2	5.3E-2	2.7E-2	2.5E-1	2.7E-2	4.1E-1	3.3E-1	3.0E-1	3.0E-1
F 22	6.0	10.9	7400	8.6E-2	8.6E-2	0.0	2.0E-1	2.2E-1	4.7E-1	4.7E-1	4.2E-1	4.2E-1
F 33	6.8	12.3	8000	7.0E-2	7.0E-2	3.5E-2	2.6E-1	3.5E-2	5.9E-1	3.7E-1	3.3E-1	3.3E-1
G 15	8.7	15.2	11900	0.0	0.0	0.0	5.6E-2	2.8E-2	4.7E-1	8.5E-2	8.5E-2	8.5E-2
G 20	9.2	9.6	12200	0.0	0.0	0.0	3.3E-2	2.8E-2	8.5E-2	6.1E-2	6.1E-2	6.1E-2
H 11	9.4	6.8	13500	5.8E-2	2.9E-2	2.9E-2	0.0	6.4E-2	6.1E-2	1.1E-1	9.4E-2	9.5E-2
I 39	5.9	10.1	12300	0.0	0.0	0.0	7.7E-2	8.9E-2	1.8E-1	1.7E-1	1.7E-1	1.7E-1
I 18	7.8	4.7	12100	0.0	0.0	0.0	1.5E-1	3.3E-2	1.7E-1	1.8E-1	1.8E-1	1.8E-1
J 15	7.9	3.0	12200	0.0	0.0	0.0	6.1E-1	5.0E-2	1.8E-1	6.6E-1	6.6E-1	6.6E-1
J 16	8.9	8.2	12600	0.0	0.0	0.0	3.7E-1	3.4E-2	6.6E-1	4.1E-1	4.1E-1	4.1E-1
K 18	9.8	6.0	12200	2.8E-2	2.8E-2	2.8E-2	1.7E-1	2.8E-2	4.1E-1	2.4E-1	2.3E-1	2.3E-1
AVERAGES												
SPREADER, NO REINJ FROM D.C.				4.6E-2	4.3E-2	1.4E-2	1.7E-1	6.5E-2	3.3E-1	2.7E-1	2.5E-1	2.5E-1
MASS FIRED OVERFEED				1.7E-2	1.2E-2	8.2E-3	2.6E-1	7.0E-2	3.7E-1	3.5E-1	3.4E-1	3.4E-1
HIGH				8.5E-2	8.6E-2	3.5E-2	6.1E-1	2.2E-1	7.0E-1	6.6E-1	6.6E-1	6.6E-1
LOW				2.8E-2	2.8E-2	2.3E-2	3.3E-2	2.7E-2	6.1E-2	6.1E-2	6.1E-2	6.1E-2

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

METHYLPYRENE/FLUORANTHENE

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	EMISSIONS - µG/DRY SCM: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	10.8	10600	4.5E-1	0.0	0.0	1.9E-1	0.0	6.4E-1	2.3E-1	1.9E-1	1.9E-1
B 31	6.0	9.0	11200	0.0	0.0	0.0	3.3E-2	0.0	3.3E-2	3.3E-2	3.3E-2	3.3E-2
C 44	6.9	16.0	15000	2.5E-2	2.5E-2	0.0	8.6E-2	2.5E-2	1.6E-1	1.3E-1	1.1E-1	1.1E-1
C 45	8.3	15.8	14500	2.5E-2	0.0	2.5E-2	0.0	2.5E-2	7.6E-2	5.3E-2	5.1E-2	5.1E-2
C 46	9.0	16.8	11900	2.5E-2	2.5E-2	2.5E-2	2.5E-2	2.5E-2	1.3E-1	1.0E-1	7.6E-2	7.6E-2
AVERAGE				1.0E-1	1.0E-2	1.0E-2	6.7E-2	1.5E-2	2.1E-1	1.1E-1	9.3E-2	9.2E-2
HIGH				4.5E-1	2.5E-2	2.5E-2	1.9E-1	2.5E-2	6.4E-1	2.3E-1	1.9E-1	1.9E-1
LOW				2.5E-2	2.5E-2	2.5E-2	2.5E-2	2.5E-2	3.3E-2	3.3E-2	3.3E-2	3.3E-2

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	EMISSIONS - µG/DRY SCM: 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	4.1	12000	0.0	0.0	0.0	1.2E-1	3.5E-2	1.5E-1	1.5E-1	1.5E-1	1.5E-1
E 16	8.3	13.5	11700	0.0	4.6E-2	0.0	5.5E-2	2.3E-2	1.2E-1	1.0E-1	7.9E-2	7.8E-2
E 17	6.2	12.4	11600	0.0	5.3E-2	0.0	1.1E-1	0.0	1.6E-1	1.4E-1	1.1E-1	1.1E-1
F 22	6.6	10.9	7400	0.0	8.6E-2	0.0	6.9E-2	0.0	1.5E-1	1.2E-1	6.9E-2	6.9E-2
F 30	6.8	12.3	8000	0.0	0.0	0.0	8.7E-1	3.5E-2	9.1E-1	9.1E-1	9.1E-1	9.1E-1
G 15	8.7	15.2	11900	0.0	0.0	0.0	2.8E-2	2.8E-2	5.6E-2	5.6E-2	5.6E-2	5.6E-2
G 20	9.2	9.6	12200	0.0	0.0	0.0	2.8E-2	2.8E-2	5.6E-2	5.6E-2	5.6E-2	5.6E-2
H 11	9.4	6.8	13500	0.0	5.8E-2	0.0	0.0	0.0	5.8E-2	3.2E-2	4.1E-4	8.8E-4
I 09	5.9	10.1	12300	0.0	0.0	0.0	3.0E-2	3.0E-2	6.0E-2	6.0E-2	6.0E-2	6.6E-2
I 18	7.8	4.7	12100	0.0	0.0	0.0	3.3E-2	3.3E-2	6.7E-2	6.7E-2	6.7E-2	6.7E-2
J 15	7.9	3.0	12200	0.0	0.0	0.0	1.8E-1	2.8E-2	2.1E-1	2.1E-1	2.1E-1	2.1E-1
J 16	8.9	8.2	12600	0.0	0.0	0.0	2.2E-1	2.9E-2	2.5E-1	2.5E-1	2.5E-1	2.5E-1
K 18	9.8	6.0	12200	0.0	0.0	0.0	2.8E-2	0.0	2.8E-2	2.8E-2	2.8E-2	2.8E-2
AVERAGES												
SPREADER, NO REINJ FROM D.C.				0.0	3.1E-2	0.0	1.9E-1	1.9E-2	2.4E-1	2.3E-1	2.1E-1	2.1E-1
MASS FIRED OVERFEED				0.0	8.3E-3	0.0	8.8E-2	2.2E-2	1.2E-1	1.1E-1	1.1E-1	1.1E-1
HIGH					8.6E-2		8.7E-1	3.5E-2	9.1E-1	9.1E-1	9.1E-1	9.1E-1
LOW					4.6E-2		2.8E-2	2.3E-2	2.8E-2	2.8E-2	4.1E-4	8.8E-4

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

BENZO(C)PHENANTHRENE

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	EMISSIONS - µG/DRY SCM: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	10.0	10600	2.8E-2	0.0	0.0	2.8E-2	0.0	5.6E-2	3.0E-2	2.8E-2	2.8E-2
B 31	6.0	9.0	11200	0.0	0.0	0.0	2.7E-2	0.0	2.7E-2	2.7E-2	2.7E-2	2.7E-2
B 33	6.1	8.0	11100	0.0	0.0	0.0	2.7E-2	2.7E-2	5.3E-2	5.3E-2	5.3E-2	5.3E-2
C 44	8.9	16.0	15000	2.5E-2	2.5E-2	2.5E-2	2.5E-2	2.5E-2	1.3E-1	1.0E-1	7.6E-2	7.6E-2
C 45	8.3	15.0	14500	2.5E-2	0.0	2.5E-2	0.0	0.0	5.1E-2	2.8E-2	2.6E-2	2.5E-2
C 46	9.0	16.0	11900	2.5E-2	0.0	2.5E-	2.5E-2	2.5E-2	1.0E-1	7.8E-2	7.6E-2	7.6E-2
AVERAGE				1.7E-2	4.2E-3	1.3E-2	2.2E-2	1.3E-2	6.9E-2	5.2E-2	4.8E-2	4.8E-2
HIGH				2.8E-2	2.5E-2	2.5E-2	2.8E-2	2.7E-2	1.3E-1	1.0E-1	7.6E-2	7.6E-2
LOW				2.5E-2	2.5E-2	2.5E-2	2.5E-2	2.5E-2	2.7E-2	2.7E-2	2.6E-2	2.5E-2

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	EMISSIONS - µG/DRY SCM: 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	4.1	12000	2.9E-2	2.9E-2	0.0	2.9E-2	2.9E-2	1.2E-1	7.5E-2	5.8E-2	5.9E-2
E 16	8.3	13.5	11700	0.0	4.6E-2	0.0	2.3E-2	2.3E-2	9.2E-2	7.1E-2	4.6E-2	4.6E-2
E 17	6.2	12.4	11600	0.0	5.3E-2	0.0	2.7E-2	0.0	8.0E-2	5.6E-2	2.7E-2	2.7E-2
F 22	6.0	10.9	7400	0.0	0.0	0.0	4.3E-2	4.3E-2	8.6E-2	8.6E-2	8.6E-2	8.6E-2
F 30	6.8	12.3	8000	0.0	0.0	3.5E-2	0.0	0.0	3.5E-2	3.5E-2	3.5E-2	3.5E-2
H 11	9.4	6.8	13500	0.0	0.0	0.0	4.1E-2	2.9E-2	7.0E-2	7.0E-2	7.0E-2	7.0E-2
AVERAGES												
SPREADER, NO REINJ FROM D.C.				0.0	2.5E-2	8.7E-3	2.3E-2	1.6E-2	7.3E-2	6.2E-2	4.9E-2	4.8E-2
MASS FIRED OVERFEED				1.5E-2	1.5E-2	0.0	3.5E-2	2.9E-2	9.3E-2	7.3E-2	6.4E-2	6.5E-2
HIGH				2.9E-2	5.3E-2	3.5E-2	4.3E-2	4.3E-2	1.2E-1	8.6E-2	8.6E-2	8.6E-2
LOW				2.9E-2	2.9E-2	3.5E-2	2.3E-2	2.3E-2	3.5E-2	3.5E-2	2.7E-2	2.7E-2

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

BENZ(A)ANTHRACENE

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	*- - - EMISSIONS - µG/DRY SCM - - - - -* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	10.0	10600	2.8E-2	0.0	0.0	2.8E-2	0.0	5.6E-2	3.0E-2	2.8E-2	2.8E-2
B 31	6.0	9.0	11200	4.4E-2	0.0	2.7E-2	2.7E-2	2.7E-2	1.3E-1	8.6E-2	8.2E-2	8.2E-2
B 33	6.1	8.0	11100	0.0	2.7E-2	2.7E-2	0.0	3.2E-2	8.5E-2	7.9E-2	5.9E-2	5.9E-2
C 44	8.9	16.0	15000	2.5E-2	2.5E-2	2.5E-2	0.0	2.5E-2	1.0E-1	7.2E-2	5.1E-2	5.0E-2
C 45	8.3	15.0	14500	2.5E-2	2.5E-2	2.5E-2	2.5E-2	0.0	1.0E-1	7.2E-2	5.1E-2	5.1E-2
C 46	9.0	16.0	11900	2.5E-2	2.5E-2	2.5E-2	0.0	2.5E-2	1.0E-1	7.2E-2	5.1E-2	5.1E-2
AVERAGE				2.5E-2	1.7E-2	2.2E-2	1.3E-2	1.8E-2	1.0E-1	6.8E-2	5.4E-2	5.3E-2
HIGH				4.4E-2	2.7E-2	2.7E-2	2.8E-2	3.2E-2	1.3E-1	8.6E-2	8.2E-2	8.2E-2
LOW				2.5E-2	2.5E-2	2.5E-2	2.5E-2	2.5E-2	5.6E-2	3.0E-2	2.8E-2	2.8E-2

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	*- - - EMISSIONS - µG/DRY SCM - - - - -* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	4.1	12000	2.9E-2	2.9E-2	0.0	7.0E-2	2.9E-2	1.6E-1	1.2E-1	1.0E-1	1.0E-1
E 16	8.3	13.5	11700	0.0	0.0	0.0	0.0	2.3E-2	2.3E-2	2.3E-2	2.3E-2	2.3E-2
E 17	6.2	12.4	11600	0.0	5.3E-2	0.0	2.7E-2	0.0	8.0E-2	5.6E-2	2.7E-2	2.7E-2
F 22	6.0	10.9	7400	0.0	0.0	0.0	4.3E-2	0.0	4.3E-2	4.3E-2	4.3E-2	4.3E-2
G 20	9.2	9.6	12200	0.0	0.0	0.0	2.8E-2	0.0	2.8E-2	2.8E-2	2.8E-2	2.8E-2
H 11	9.4	6.8	13500	0.0	0.0	0.0	0.0	2.9E-2	2.9E-2	2.9E-2	2.9E-2	2.9E-2
K 18	9.8	6.0	12200	0.0	0.0	0.0	2.8E-2	0.0	2.8E-2	2.8E-2	2.8E-2	2.8E-2
AVERAGES												
SPREADER,NO REINJ FROM D.C.				0.0	1.3E-2	0.0	2.4E-2	5.8E-3	4.3E-2	3.7E-2	3.0E-2	3.0E-2
MASS FIRED OVERFEED				1.0E-2	1.0E-2	0.0	3.3E-2	1.9E-2	7.1E-2	5.8E-2	5.2E-2	5.2E-2
HIGH				2.9E-2	5.3E-2		7.0E-2	2.9E-2	1.6E-1	1.2E-1	1.0E-1	1.0E-1
LOW				2.9E-2	2.9E-2		2.7E-2	2.3E-2	2.3E-2	2.3E-2	2.3E-2	2.3E-2

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

CHRYSENE

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	EMISSIONS - µG/DRY SCM: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	16.0	10600	2.8E-2	0.0	0.0	5.6E-2	0.0	8.4E-2	5.6E-2	5.6E-2	5.6E-2
B 31	6.0	9.0	11200	2.7E-2	0.0	6.0E-2	1.6E-2	2.7E-2	1.3E-1	1.1E-1	1.0E-1	1.0E-1
B 33	6.1	8.0	11100	0.0	0.0	3.7E-2	8.0E-2	6.4E-2	1.8E-1	1.8E-1	1.8E-1	1.8E-1
C 44	8.9	16.0	15000	2.5E-2	2.5E-2	2.5E-2	5.0E-2	2.5E-2	1.5E-1	1.2E-1	1.0E-1	1.0E-1
C 45	8.3	15.0	14500	2.5E-2	2.5E-2	2.5E-2	0.0	0.0	7.6E-2	4.7E-2	2.6E-2	2.5E-2
C 46	9.0	16.0	11900	2.5E-2	2.5E-2	4.1E-2	1.3E-1	5.1E-2	2.7E-1	2.4E-1	2.2E-1	2.2E-1
AVERAGE				2.2E-2	1.3E-2	3.1E-2	5.5E-2	2.8E-2	1.5E-1	1.3E-1	1.1E-1	1.1E-1
HIGH				2.8E-2	2.5E-2	6.0E-2	1.3E-1	6.4E-2	2.7E-1	2.4E-1	2.2E-1	2.2E-1
LOW				2.5E-2	2.5E-2	2.5E-2	1.6E-2	2.5E-2	7.6E-2	4.7E-2	2.6E-2	2.5E-2

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	EMISSIONS - µG/DRY SCM: 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	4.1	12000	2.9E-2	2.9E-2	0.0	1.5E-1	7.0E-2	2.7E-1	2.3E-1	2.2E-1	2.2E-1
E 16	8.3	13.5	11700	4.6E-2	0.0	2.3E-2	3.2E-2	2.3E-2	1.2E-1	8.0E-2	7.9E-2	7.8E-2
E 17	6.2	12.4	11600	5.3E-2	5.3E-2	2.7E-2	2.7E-2	2.7E-2	1.9E-1	1.1E-1	8.1E-2	8.0E-2
F 22	6.0	16.9	7400	0.0	8.6E-2	4.3E-2	5.1E-2	4.3E-2	2.2E-1	1.8E-1	1.4E-1	1.4E-1
F 30	6.8	12.3	8000	7.0E-2	7.0E-2	3.5E-2	7.0E-2	3.5E-2	2.0E-1	1.8E-1	1.4E-1	1.4E-1
G 15	8.7	15.2	11900	0.0	0.0	0.0	2.8E-2	0.0	2.8E-2	2.8E-2	2.8E-2	2.8E-2
G 20	9.2	9.6	12200	0.0	0.0	0.0	2.8E-2	0.0	2.8E-2	2.8E-2	2.8E-2	2.8E-2
H 11	9.4	6.8	13500	5.8E-2	2.9E-2	2.9E-2	1.2E-1	4.7E-2	2.8E-1	2.1E-1	1.9E-1	1.9E-1
I 18	7.8	4.7	12100	0.0	0.0	0.0	3.3E-2	0.0	3.3E-2	3.3E-2	3.3E-2	3.3E-2
J 15	7.9	3.0	12200	0.0	0.0	0.0	2.8E-2	2.8E-2	5.5E-2	5.5E-2	5.5E-2	5.5E-2
J 16	8.9	8.2	12600	0.0	0.0	0.0	2.9E-2	2.9E-2	5.7E-2	5.7E-2	5.7E-2	5.7E-2
K 18	9.8	6.0	12200	0.0	0.0	0.0	2.8E-2	0.0	2.8E-2	2.8E-2	2.8E-2	2.8E-2
AVERAGES				2.8E-2	3.5E-2	2.1E-2	3.9E-2	2.1E-2	1.4E-1	1.0E-1	8.2E-2	8.2E-2
SPREADER, NO REINJ FROM D.C.				1.5E-2	1.0E-2	4.9E-3	6.3E-2	2.9E-2	1.2E-1	1.0E-1	1.0E-1	1.0E-1
MASS FIRED OVERFEED				7.0E-2	8.6E-2	4.3E-2	1.5E-1	7.0E-2	2.8E-1	2.3E-1	2.2E-1	2.2E-1
HIGH				2.9E-2	2.9E-2	2.3E-2	2.7E-2	2.3E-2	2.8E-2	2.8E-2	2.8E-2	2.8E-2
LOW												

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

METHYLCHRYSENES

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	*- - - EMISSIONS - µG/DRY SCM - - - - -* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	10.0	10600	0.0	0.0	0.0	5.6E-2	0.0	5.6E-2	5.6E-2	5.6E-2	5.6E-2
B 31	6.0	9.0	11200	0.0	0.0	3.3E-2	3.8E-2	0.0	7.1E-2	7.1E-2	7.1E-2	7.1E-2
B 33	6.1	8.0	11100	0.0	0.0	2.7E-2	0.0	0.0	2.7E-2	2.7E-2	2.7E-2	2.7E-2
AVERAGE				0.0	0.0	2.0E-2	3.1E-2	0.0	5.1E-2	5.1E-2	5.1E-2	5.1E-2
HIGH						3.3E-2	5.6E-2		7.1E-2	7.1E-2	7.1E-2	7.1E-2
LOW						2.7E-2	3.8E-2		2.7E-2	2.7E-2	2.7E-2	2.7E-2

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	*- - - EMISSIONS - µG/DRY SCM - - - - -* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	4.1	12000	0.0	0.0	0.0	9.3E-2	2.9E-2	1.2E-1	1.2E-1	1.2E-1	1.2E-1
E 16	6.3	13.5	11700	0.0	0.0	0.0	2.3E-2	0.0	2.3E-2	2.3E-2	2.3E-2	2.3E-2
E 17	6.2	12.4	11600	0.0	0.0	0.0	2.7E-2	0.0	2.7E-2	2.7E-2	2.7E-2	2.7E-2
F 22	6.0	10.9	7400	0.0	8.6E-2	0.0	5.1E-2	0.0	1.4E-1	1.0E-1	5.2E-2	5.2E-2
F 30	6.8	12.3	8300	0.0	0.0	3.5E-2	6.3E-2	0.0	1.0E-1	1.0E-1	1.0E-1	1.0E-1
G 15	5.7	15.2	11900	0.0	0.0	0.0	2.8E-2	0.0	2.8E-2	2.8E-2	2.8E-2	2.8E-2
G 20	9.2	9.6	12200	0.0	0.0	0.0	2.8E-2	0.0	2.8E-2	2.8E-2	2.8E-2	2.8E-2
H 11	9.4	6.8	13500	0.0	5.8E-2	0.0	0.0	2.9E-2	8.8E-2	6.1E-2	3.0E-2	3.0E-2
J 15	7.9	3.8	12200	0.0	0.0	0.0	2.8E-2	0.0	2.8E-2	2.8E-2	2.8E-2	2.8E-2
J 16	8.9	8.2	12600	0.0	0.0	0.0	2.9E-2	0.0	2.9E-2	2.9E-2	2.9E-2	2.9E-2
K 18	9.8	6.0	12200	0.0	0.0	0.0	2.8E-2	0.0	2.8E-2	2.8E-2	2.8E-2	2.8E-2
AVERAGES												
SPREADER, NO REINJ FROM D.C.				0.0	1.4E-2	5.8E-3	3.7E-2	0.0	5.7E-2	5.0E-2	4.3E-2	4.3E-2
MASS FIRED OVERFEED				0.0	1.2E-2	0.0	3.5E-2	1.2E-2	5.9E-2	5.4E-2	4.7E-2	4.7E-2
HIGH					8.6E-2	3.5E-2	9.3E-2	2.9E-2	1.4E-1	1.2E-1	1.2E-1	1.2E-1
LOW					5.8E-2	3.5E-2	2.3E-2	2.9E-2	2.3E-2	2.3E-2	2.3E-2	2.3E-2

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

DIMETHYLBENZANTHRACENES

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	*- - - EMISSIONS - µG/DRY SCM - - - - -* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 33	6.0	16.0	10600	0.0	0.0	0.0	2.8E-2	0.0	2.8E-2	2.8E-2	2.8E-2	2.8E-2

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

BENZOFLUORANTHENES

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	EMISSIONS - µG/DRY SCM: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	16.0	10600	0.0	0.0	0.0	2.8E-2	0.0	2.8E-2	2.8E-2	2.8E-2	2.8E-2
B 33	6.1	8.0	11100	0.0	0.0	2.7E-2	2.7E-2	0.0	5.3E-2	5.3E-2	5.3E-2	5.3E-2
C 44	8.9	16.0	15000	0.0	0.0	0.0	2.5E-2	1.5E-1	1.8E-1	1.8E-1	1.8E-1	1.8E-1
C 45	8.3	15.0	14500	0.0	0.0	0.0	2.5E-2	4.1E-2	6.6E-2	6.6E-2	6.6E-2	6.6E-2
C 46	9.0	16.0	11900	0.0	0.0	0.0	0.0	3.2E-1	3.2E-1	3.2E-1	3.2E-1	3.2E-1
AVERAGE				0.0	0.0	5.3E-3	2.1E-2	1.0E-1	1.3E-1	1.3E-1	1.3E-1	1.3E-1
HIGH						2.7E-2	2.8E-2	3.2E-1	3.2E-1	3.2E-1	3.2E-1	3.2E-1
LOW						2.7E-2	2.5E-2	4.1E-2	2.8E-2	2.8E-2	2.8E-2	2.8E-2

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	EMISSIONS - µG/DRY SCM: 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	4.1	12000	0.0	2.9E-2	0.0	1.1E-1	1.2E-1	2.6E-1	2.4E-1	2.3E-1	2.3E-1
E 17	6.2	12.4	11600	0.0	6.4E-2	0.0	0.0	0.0	6.4E-2	3.5E-2	4.5E-4	2.6E-4
F 22	6.0	10.9	7400	0.0	8.6E-2	0.0	5.1E-2	4.3E-2	1.8E-1	1.4E-1	1.0E-1	9.5E-2
G 15	8.7	15.2	11900	0.0	0.0	0.0	2.8E-2	0.0	2.8E-2	2.8E-2	2.8E-2	2.8E-2
G 20	9.2	9.6	12200	0.0	0.0	0.0	2.8E-2	0.0	2.8E-2	2.8E-2	2.8E-2	2.8E-2
H 11	9.4	6.8	13500	0.0	0.0	0.0	2.9E-2	7.6E-2	1.1E-1	1.1E-1	1.1E-1	1.1E-1
I 16	7.8	4.7	12100	0.0	0.0	0.0	3.3E-2	0.0	3.3E-2	3.3E-2	3.3E-2	3.3E-2
J 16	8.9	8.2	12600	0.0	0.0	0.0	2.9E-2	0.0	2.9E-2	2.9E-2	2.9E-2	2.9E-2
K 16	9.8	6.0	12200	0.0	0.0	0.0	2.8E-2	0.0	2.8E-2	2.8E-2	2.8E-2	2.8E-2
AVERAGES												
SPREADER, NO REINJ FROM D.C.				0.0	3.7E-2	0.0	2.7E-2	1.1E-2	7.5E-2	5.8E-2	3.8E-2	3.8E-2
MASS FIRED OVERFEED				0.0	5.8E-3	0.0	4.6E-2	3.8E-2	9.0E-2	8.8E-2	6.4E-2	8.4E-2
HIGH					8.6E-2		1.1E-1	1.2E-1	2.6E-1	2.4E-1	2.3E-1	2.3E-1
LOW					2.9E-2		2.8E-2	4.3E-2	2.8E-2	2.8E-2	4.5E-4	2.6E-4

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

BENZO(E)PYRENE

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	EMISSIONS - µG/DRY SCM: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
B 33	6.0	10.0	10600	0.0	0.0	0.0	2.8E-2	0.0	2.8E-2	2.8E-2	2.8E-2	2.8E-2
B 33	6.1	8.0	11100	0.0	0.0	2.7E-2	2.7E-2	0.0	5.3E-2	5.3E-2	5.3E-2	5.3E-2
C 45	8.3	15.0	14500	0.0	0.0	0.0	2.5E-2	2.5E-2	5.1E-2	5.1E-2	5.1E-2	5.1E-2
AVERAGE				0.0	0.0	8.9E-3	2.7E-2	8.5E-3	4.4E-2	4.4E-2	4.4E-2	4.4E-2
HIGH						2.7E-2	2.8E-2	2.5E-2	5.3E-2	5.3E-2	5.3E-2	5.3E-2
LOW						2.7E-2	2.5E-2	2.5E-2	2.8E-2	2.8E-2	2.8E-2	2.8E-2

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	EMISSIONS - µG/DRY SCM: 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
E 16	8.3	13.5	11700	0.0	0.0	0.0	2.3E-2	0.0	2.3E-2	2.3E-2	2.3E-2	2.3E-2
E 17	6.2	12.4	11600	0.0	0.0	0.0	2.7E-2	0.0	2.7E-2	2.7E-2	2.7E-2	2.7E-2
F 22	6.0	10.9	7400	0.0	8.6E-2	0.0	5.1E-2	0.0	1.4E-1	1.0E-1	5.2E-2	5.2E-2
H 11	9.4	6.8	13500	0.0	0.0	0.0	2.9E-2	7.6E-2	1.1E-1	1.1E-1	1.1E-1	1.1E-1
J 15	7.9	3.8	12200	0.0	0.0	0.0	2.8E-2	0.0	2.8E-2	2.8E-2	2.8E-2	2.8E-2
J 16	8.9	8.2	12600	0.0	0.0	0.0	2.9E-2	0.0	2.9E-2	2.9E-2	2.9E-2	2.9E-2
K 18	9.8	6.0	12200	0.0	0.0	0.0	2.8E-2	0.0	2.8E-2	2.8E-2	2.8E-2	2.8E-2
AVERAGES												
SPREADER,NO REINJ FROM D.C.				0.0	2.9E-2	0.0	3.4E-2	0.0	6.2E-2	4.9E-2	3.4E-2	3.4E-2
MASS FIRED OVERFEED				0.0	0.0	0.0	2.8E-2	1.9E-2	4.7E-2	4.7E-2	4.7E-2	4.7E-2
HIGH					8.6E-2		5.1E-2	7.6E-2	1.4E-1	1.1E-1	1.1E-1	1.1E-1
LOW					8.6E-2		2.3E-2	7.6E-2	2.3E-2	2.3E-2	2.3E-2	2.3E-2

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

BENZO(A)PYRENE

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	EMISSIONS - µG/DRY SCM: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
B 33	6.0	10.0	10600	0.0	0.0	0.0	2.8E-2	0.0	2.8E-2	2.8E-2	2.8E-2	2.8E-2
B 33	6.1	8.0	11100	0.0	0.0	2.7E-2	2.7E-2	0.0	5.3E-2	5.3E-2	5.3E-2	5.3E-2
C 44	8.9	16.0	15000	0.0	2.5E-2	0.0	0.0	0.0	2.5E-2	1.9E-2	1.8E-4	3.8E-5
C 46	9.0	16.0	11900	0.0	0.0	2.5E-2	0.0	2.5E-2	5.1E-2	5.1E-2	5.1E-2	5.1E-2
AVERAGE				0.0	6.3E-3	1.3E-2	1.4E-2	6.3E-3	3.9E-2	3.8E-2	3.3E-2	3.3E-2
HIGH					2.5E-2	2.7E-2	2.8E-2	2.5E-2	5.3E-2	5.3E-2	5.3E-2	5.3E-2
LOW					2.5E-2	2.5E-2	2.7E-2	2.5E-2	2.5E-2	1.9E-2	1.8E-4	3.8E-5

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	EMISSIONS - µG/DRY SCM: 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
E 16	6.3	13.5	11700	0.0	0.0	0.0	2.3E-2	0.0	2.3E-2	2.3E-2	2.3E-2	2.3E-2
H 11	9.4	6.8	13500	0.0	0.0	0.0	2.9E-2	2.9E-2	5.8E-2	5.8E-2	5.8E-2	5.8E-2
K 18	9.8	6.0	12200	0.0	0.0	0.0	2.8E-2	0.0	2.8E-2	2.8E-2	2.8E-2	2.8E-2
AVERAGES												
SPREADER, NO REINJ FROM D.C.				0.0	0.0	0.0	2.3E-2	0.0	2.3E-2	2.3E-2	2.3E-2	2.3E-2
MASS FIRED OVERFEED				0.0	0.0	0.0	2.9E-2	1.5E-2	4.3E-2	4.3E-2	4.3E-2	4.3E-2
HIGH							2.9E-2	2.9E-2	5.8E-2	5.8E-2	5.8E-2	5.8E-2
LOW							2.3E-2	2.9E-2	2.3E-2	2.3E-2	2.3E-2	2.3E-2

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

PERYLENE

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	*- - - EMISSIONS - µG/DRY SCM - - - - -* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	10.0	10600	0.0	0.0	0.0	2.8E-2	0.0	2.8E-2	2.8E-2	2.8E-2	2.8E-2
B 33	6.1	8.0	11100	0.0	0.0	2.7E-2	2.7E-2	0.0	5.3E-2	5.3E-2	5.3E-2	5.3E-2
C 44	6.9	16.0	15000	0.0	0.0	0.0	0.0	2.5E-2	2.5E-2	2.5E-2	2.5E-2	2.5E-2
AVERAGE				0.0	0.0	8.9E-3	1.8E-2	8.4E-3	3.6E-2	3.6E-2	3.6E-2	3.6E-2
HIGH						2.7E-2	2.8E-2	2.5E-2	5.3E-2	5.3E-2	5.3E-2	5.3E-2
LOW						2.7E-2	2.7E-2	2.5E-2	2.5E-2	2.5E-2	2.5E-2	2.5E-2

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	*- - - EMISSIONS - µG/DRY SCM - - - - -* 18.5 µM +9.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
E 16	6.3	13.5	11700	0.0	0.0	0.0	2.3E-2	0.0	2.3E-2	2.3E-2	2.3E-2	2.3E-2
E 17	6.2	12.4	11600	0.0	0.0	0.0	2.7E-2	0.0	2.7E-2	2.7E-2	2.7E-2	2.7E-2
F 22	6.0	10.9	7400	0.0	0.0	0.0	4.3E-2	0.0	4.3E-2	4.3E-2	4.3E-2	4.3E-2
H 11	9.4	6.8	13500	0.0	0.0	0.0	2.9E-2	2.9E-2	5.8E-2	5.8E-2	5.8E-2	5.8E-2
K 18	9.8	6.0	12200	0.0	0.0	0.0	2.8E-2	0.0	2.8E-2	2.8E-2	2.8E-2	2.8E-2
AVERAGES												
SPREADER,NO REINJ FROM D.C.				0.0	0.0	0.0	3.1E-2	0.0	3.1E-2	3.1E-2	3.1E-2	3.1E-2
MASS FIRED OVERFEED				0.0	0.0	0.0	2.9E-2	1.5E-2	4.3E-2	4.3E-2	4.3E-2	4.3E-2
HIGH							4.3E-2	2.9E-2	5.8E-2	5.8E-2	5.8E-2	5.8E-2
LOW							2.3E-2	2.9E-2	2.3E-2	2.3E-2	2.3E-2	2.3E-2

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

INDENO(1,2,3-CD)PYRENE

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	EMISSIONS - µG/DRY SCM: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.8	10.0	10600	0.0	0.0	0.0	8.4E-2	0.0	8.4E-2	8.4E-2	8.4E-2	8.4E-2
C 45	8.3	15.0	14500	0.0	0.0	2.5E-2	0.0	0.0	2.5E-2	2.5E-2	2.5E-2	2.5E-2
AVERAGE				0.0	0.0	1.3E-2	4.2E-2	0.0	5.5E-2	5.5E-2	5.5E-2	5.5E-2
HIGH						2.5E-2	8.4E-2		8.4E-2	8.4E-2	8.4E-2	8.4E-2
LOW						2.5E-2	8.4E-2		2.5E-2	2.5E-2	2.5E-2	2.5E-2

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	EMISSIONS - µG/DRY SCM: 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	4.1	12000	0.0	0.0	0.0	2.9E-2	2.9E-2	5.8E-2	5.8E-2	5.8E-2	5.8E-2
E 16	8.3	13.5	11700	0.0	4.6E-2	2.3E-2	3.2E-2	0.0	1.0E-1	8.1E-2	5.6E-2	5.5E-2
E 17	6.2	12.4	11600	5.3E-2	0.0	0.0	2.7E-2	0.0	8.0E-2	2.8E-2	2.7E-2	2.7E-2
F 22	6.0	10.9	7400	8.6E-2	8.6E-2	0.0	4.3E-2	4.3E-2	2.6E-1	1.4E-1	8.7E-2	8.7E-2
F 30	6.8	12.3	8000	0.0	0.0	3.5E-2	0.0	0.0	3.5E-2	3.5E-2	3.5E-2	3.5E-2
G 20	9.2	9.6	12200	0.0	0.0	0.0	2.8E-2	0.0	2.8E-2	2.8E-2	2.8E-2	2.8E-2
H 11	9.4	6.8	13500	0.0	0.0	0.0	2.9E-2	4.1E-2	7.0E-2	7.0E-2	7.0E-2	7.0E-2
J 16	8.9	8.2	12600	0.0	0.0	0.0	2.9E-2	2.9E-2	5.7E-2	5.7E-2	5.7E-2	5.7E-2
K 18	9.8	6.0	12200	2.8E-2	0.0	0.0	2.8E-2	0.0	5.7E-2	2.9E-2	2.8E-2	2.9E-2
AVERAGES												
SPREADER, NO REINJ FROM D.C.				2.8E-2	2.6E-2	1.2E-2	2.6E-2	8.6E-3	1.0E-1	6.1E-2	4.6E-2	4.6E-2
MASS FIRED OVERFEED				7.1E-3	0.0	0.0	2.9E-2	2.5E-2	6.1E-2	5.4E-2	5.3E-2	5.4E-2
HIGH				8.6E-2	8.6E-2	3.5E-2	4.3E-2	4.3E-2	2.6E-1	1.4E-1	8.7E-2	8.7E-2
LOW				2.8E-2	4.6E-2	2.3E-2	2.7E-2	2.9E-2	2.8E-2	2.8E-2	2.7E-2	2.7E-2

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

BENZO(G,H,I)PERYLENE

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	EMISSIONS - µG/DRY SCM: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
C 44	8.9	16.0	15000	0.0	2.5E-2	0.0	0.0	0.0	2.5E-2	1.9E-2	1.8E-4	3.8E-5
C 45	8.3	15.0	14500	0.0	0.0	2.5E-2	0.0	0.0	2.5E-2	2.5E-2	2.5E-2	2.5E-2
C 46	9.0	16.0	11900	0.0	0.0	0.0	0.0	2.5E-2	2.5E-2	2.5E-2	2.5E-2	2.5E-2
AVERAGE				0.0	8.4E-3	8.5E-3	0.0	8.5E-3	2.5E-2	2.3E-2	1.7E-2	1.7E-2
HIGH					2.5E-2	2.5E-2		2.5E-2	2.5E-2	2.5E-2	2.5E-2	2.5E-2
LOW					2.5E-2	2.5E-2		2.5E-2	2.5E-2	1.9E-2	1.8E-4	3.8E-5

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	EMISSIONS - µG/DRY SCM: 16.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	4.1	12000	0.0	2.9E-2	0.0	6.4E-2	5.8E-2	1.5E-1	1.4E-1	1.2E-1	1.2E-1
E 16	8.3	13.5	11700	0.0	4.6E-2	0.0	3.7E-2	0.0	8.3E-2	6.2E-2	3.7E-2	3.7E-2
E 17	6.2	12.4	11600	0.0	5.3E-2	0.0	3.2E-2	0.0	8.5E-2	6.1E-2	3.2E-2	3.2E-2
F 22	6.0	10.9	7400	0.0	8.6E-2	0.0	1.5E-1	1.4E-1	3.7E-1	3.3E-1	2.8E-1	2.8E-1
F 30	6.8	12.3	8000	0.0	0.0	0.0	0.0	3.5E-2	3.5E-2	3.5E-2	3.5E-2	3.5E-2
G 20	9.2	9.6	12200	0.0	0.0	0.0	2.8E-2	0.0	2.8E-2	2.8E-2	2.8E-2	2.8E-2
H 11	9.4	6.8	13500	0.0	0.0	0.0	2.9E-2	4.7E-2	7.6E-2	7.6E-2	7.6E-2	7.6E-2
I 09	5.9	10.1	12300	0.0	0.0	0.0	3.6E-2	3.0E-2	6.5E-2	6.5E-2	6.5E-2	6.5E-2
J 15	7.9	3.0	12200	0.0	0.0	0.0	4.4E-2	0.0	4.4E-2	4.4E-2	4.4E-2	4.4E-2
J 16	6.9	8.2	12600	0.0	0.0	0.0	2.9E-2	2.9E-2	5.7E-2	5.7E-2	5.7E-2	5.7E-2
K 18	9.8	6.0	12200	2.8E-2	0.0	2.8E-2	1.1E-1	0.0	1.6E-1	1.4E-1	1.4E-1	1.4E-1
AVERAGES												
SPREADER,NO REINJ FROM D.C.				0.0	3.7E-2	0.0	4.9E-2	3.4E-2	1.2E-1	1.0E-1	8.3E-2	8.3E-2
MASS FIRED OVERFEED				4.7E-3	4.8E-3	4.7E-3	5.2E-2	2.7E-2	9.3E-2	8.6E-2	8.4E-2	8.4E-2
HIGH				2.8E-2	8.6E-2	2.8E-2	1.5E-1	1.4E-1	3.7E-1	3.3E-1	2.8E-1	2.8E-1
LOW				2.8E-2	2.9E-2	2.8E-2	2.8E-2	2.9E-2	2.8E-2	2.8E-2	2.8E-2	2.8E-2

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

3-METHYLCHOLANTHRENE

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	EMISSIONS - µG/DRY SCM: 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
K 18	9.8	6.0	12200	0.0	0.0	0.0	2.8E-2	0.0	2.8E-2	2.8E-2	2.8E-2	2.8E-2

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

DIBENZPYRENES

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	*- - - EMISSIONS - UG/DRY SCM - - - - -* 18.5 UM +5.9 UM CYCLONE	2.4 UM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
E 16	8.3	13.5	11700	0.0	0.0	0.0	2.3E-2	0.0	2.3E-2	2.3E-2	2.3E-2	2.3E-2
E 17	6.2	12.4	11600	0.0	0.0	0.0	0.0	3.2E-2	3.2E-2	3.2E-2	3.2E-2	3.2E-2
F 22	6.0	10.9	7400	0.0	8.6E-2	0.0	0.0	0.0	8.6E-2	4.7E-2	6.0E-4	3.4E-4
H 11	9.4	6.8	13500	0.0	0.0	0.0	0.0	4.7E-2	4.7E-2	4.7E-2	4.7E-2	4.7E-2
AVERAGES												
SPREADER,NO REINJ FROM D.C.				0.0	2.9E-2	0.0	7.7E-3	1.1E-2	4.7E-2	3.4E-2	1.9E-2	1.8E-2
MASS FIRED OVERFEED				0.0	0.0	0.0	0.0	4.7E-2	4.7E-2	4.7E-2	4.7E-2	4.7E-2
HIGH					8.6E-2		2.3E-2	4.7E-2	8.6E-2	4.7E-2	4.7E-2	4.7E-2
LOW					8.6E-2		2.3E-2	3.2E-2	2.3E-2	2.3E-2	6.0E-4	3.4E-4

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

CORONENE

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	EMISSIONS - UG/DRY SCM: 18.5 UM +5.9 UM CYCLONE	1.4 UM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
E 16	8.3	13.5	11700	0.0	0.0	0.0	4.1E-2	0.0	4.1E-2	4.1E-2	4.1E-2	4.1E-2
E 17	6.2	12.4	11600	0.0	0.0	0.0	2.7E-2	0.0	2.7E-2	2.7E-2	2.7E-2	2.7E-2
F 22	6.0	10.9	7400	0.0	8.6E-2	0.0	6.0E-2	0.0	1.5E-1	1.1E-1	6.1E-2	6.0E-2
H 11	4.4	6.8	13500	0.0	0.0	0.0	2.9E-2	0.0	2.9E-2	2.9E-2	2.9E-2	2.9E-2
I 39	5.9	14.1	12300	0.0	0.0	0.0	3.0E-2	0.0	3.0E-2	3.0E-2	3.0E-2	3.0E-2
J 15	7.9	3.0	12200	0.0	0.0	0.0	2.8E-2	0.0	2.8E-2	2.8E-2	2.8E-2	2.8E-2
J 16	8.9	8.2	12600	0.0	0.0	0.0	2.9E-2	0.0	2.9E-2	2.9E-2	2.9E-2	2.9E-2
K 14	9.8	6.0	12200	0.0	0.0	0.0	2.8E-2	0.0	2.8E-2	2.8E-2	2.8E-2	2.8E-2
AVERAGES												
SPREADER,NO REINJ FROM D.C.				0.0	2.9E-2	0.0	4.3E-2	0.0	7.1E-2	5.8E-2	4.3E-2	4.3E-2
MASS FIRED OVERFEED				0.0	0.0	0.0	2.9E-2	0.0	2.9E-2	2.9E-2	2.9E-2	2.9E-2
HIGH					8.6E-2		6.0E-2		1.5E-1	1.1E-1	6.1E-2	6.0E-2
LOW					8.6E-2		2.7E-2		2.7E-2	2.7E-2	2.7E-2	2.7E-2

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

RANGE IN DATA - µG/DRY SCM

	SPREADER W/REINJ. FROM D.C.			SPREADER, NO REINJ FROM D.C.			MASS FIRED OVERFEED		
	LOW	AVERAGE	HIGH	LOW	AVERAGE	HIGH	LOW	AVERAGE	HIGH
LITHIUM	1.1E+2	2.3E+3	5.4E+3	1.2E+1	6.4E+1	1.9E+2	4.8E+0	4.2E+1	1.0E+2
BERYLLIUM	3.6E-1	3.7E+1	8.5E+1	4.9E+0	1.0E+1	2.4E+1	3.4E+0	1.3E+1	3.5E+1
BORON	7.5E+0	3.9E+3	1.4E+4	3.3E+1	1.8E+2	3.1E+2	3.0E+2	2.2E+3	6.4E+3
FLUORINE	1.9E+1	5.1E+1	7.7E+1	6.7E+0	1.2E+1	2.5E+1	4.2E+0	4.5E+1	1.3E+2
SODIUM	1.6E+4	6.4E+4	1.4E+5	3.9E+2	5.4E+3	2.0E+4	4.0E+3	8.2E+3	1.5E+4
MAGNESIUM	1.3E+4	3.5E+5	7.6E+5	4.7E+2	4.4E+3	1.6E+4	3.2E+2	2.1E+3	7.9E+3
ALUMINUM	8.9E+4	2.1E+6	4.4E+6	6.4E+4	3.4E+5	8.2E+5	8.0E+3	8.4E+4	2.8E+5
SILICON	2.1E+5	2.2E+6	4.4E+6	6.7E+4	2.8E+5	6.3E+5	9.9E+3	4.0E+4	9.4E+4
PHOSPHORUS	3.8E+3	1.7E+4	3.6E+4	4.8E+2	1.5E+3	2.7E+3	4.0E+2	1.6E+3	3.3E+3
SULFUR	3.6E+4	5.3E+4	8.2E+4	1.3E+3	1.7E+5	5.0E+5	9.3E+3	7.9E+5	4.1E+6
CHLORINE	1.6E+2	5.6E+2	8.5E+2	2.1E+0	2.0E+2	9.2E+2	1.0E+1	6.1E+1	2.7E+2
POTASSIUM	4.9E+3	2.6E+4	6.9E+4	5.4E+3	2.1E+4	5.1E+4	2.0E+3	1.7E+4	3.6E+4
CALCIUM	1.0E+4	7.6E+5	2.2E+6	4.7E+3	8.7E+3	1.2E+4	1.7E+3	6.9E+3	1.6E+4
SCANDIUM	2.5E+2	3.1E+2	5.5E+2	3.9E+1	9.4E+1	1.7E+2	1.4E+1	4.1E+1	7.9E+1
TITANIUM	1.0E+0	4.7E+4	1.1E+5	1.2E+4	3.9E+4	7.0E+4	2.6E+3	8.9E+3	2.5E+4
VANADIUM	7.6E+0	1.5E+3	3.0E+3	3.9E+2	9.9E+2	1.8E+3	6.5E+1	4.2E+2	9.9E+2
CHROMIUM	1.8E+1	3.6E+3	8.3E+3	4.6E+2	5.4E+3	8.9E+3	1.3E+3	1.6E+4	6.0E+4
MANGANESE	3.4E+1	5.7E+3	1.6E+4	1.2E+2	4.5E+2	9.0E+2	2.1E+2	2.7E+3	6.9E+3
IRON	1.0E+3	3.7E+5	1.2E+6	3.1E+4	9.1E+4	2.1E+5	2.0E+4	1.5E+5	4.2E+5
COBALT	6.3E+0	2.6E+2	6.0E+2	2.2E+2	3.9E+2	6.1E+2	3.7E+1	5.8E+2	1.9E+3
NICKEL	3.8E+1	9.4E+3	2.4E+4	7.6E+2	2.9E+3	7.1E+3	7.2E+2	1.1E+4	2.6E+4
COPPER	2.0E+1	1.3E+3	3.0E+3	6.3E+1	4.2E+2	9.5E+2	1.8E+2	2.8E+3	5.5E+3
ZINC	3.5E+1	7.2E+2	1.6E+3	2.6E+1	1.7E+2	6.3E+2	1.8E+2	2.2E+3	5.7E+3
GALLIUM	9.0E+1	2.3E+2	4.5E+2	2.2E+1	1.0E+2	3.2E+2	2.2E+1	2.1E+2	4.8E+2
GERMANIUM	2.4E+1	7.3E+1	1.4E+2	1.7E+1	7.6E+1	1.4E+2	3.2E+1	6.5E+2	2.6E+3
ARSENIC	3.4E-1	2.2E+2	7.8E+2	3.6E+1	1.1E+2	2.5E+2	5.1E+1	1.1E+3	3.1E+3
SELENIUM	1.3E+0	1.3E+2	3.1E+2	2.5E+1	7.6E+1	1.7E+2	4.7E+0	1.2E+2	6.8E+2
BROMINE	8.0E+0	1.3E+1	1.7E+1	1.1E+1	3.0E+1	6.0E+1	4.0E+0	9.2E+1	3.2E+2
RUBIDIUM	2.7E+2	1.3E+3	3.0E+3	5.0E+0	1.7E+2	5.4E+2	2.2E+1	2.0E+2	5.0E+2
STRONTIUM	2.7E+3	7.8E+4	2.9E+5	4.7E+2	1.9E+3	3.7E+3	1.9E+2	7.8E+2	2.5E+3
YTTRIUM	8.6E+1	3.4E+2	7.4E+2	1.4E+2	1.9E+2	2.6E+2	1.4E+1	1.7E+2	5.5E+2
ZIRCONIUM	4.9E+1	1.6E+3	4.5E+3	5.4E+2	8.7E+2	1.7E+3	3.6E+1	2.7E+2	7.2E+2
NIOBIUM	1.1E+1	1.2E+2	3.0E+2	2.9E+1	5.1E+1	8.6E+1	8.7E+0	3.7E+1	1.5E+2
MOLYBDENUM	1.0E+1	5.6E+2	1.6E+3	4.5E+1	1.8E+2	2.7E+2	1.3E+2	4.8E+2	8.2E+2
RUTHENIUM	3.7E+0	6.7E+0	9.3E+0	1.3E+0	2.6E+0	3.4E+0	6.0E-1	1.8E+1	6.0E+1
RHODIUM	1.5E+0	2.5E+0	4.5E+0	6.4E-1	1.5E+0	2.1E+0	3.6E-1	8.0E+0	2.4E+1
PALADIUM	8.4E+0	9.4E+0	1.1E+1	1.8E+0	3.6E+0	6.8E+0	1.1E+0	2.0E+1	6.1E+1
SILVER	2.6E+1	9.4E+2	5.1E+3	8.8E-1	8.5E+1	4.9E+2	2.6E+0	4.6E+1	2.0E+2
CADMIUM	4.7E+0	1.8E+1	3.3E+1	8.5E+0	2.6E+1	6.1E+1	1.1E+1	9.5E+1	3.6E+2
INDIUM	1.8E+0	7.4E+1	4.2E+2	7.8E-1	2.6E+0	6.2E+0	1.8E+0	1.4E+1	6.1E+1
TIN	1.7E+0	5.6E+1	1.2E+2	1.6E+1	4.2E+1	8.7E+1	3.5E+1	9.6E+1	1.8E+2
ANTIMONY	1.6E+1	2.2E+1	3.4E+1	7.0E+0	1.1E+1	2.4E+1	1.5E+1	4.7E+1	1.1E+2
TELLURIUM	1.4E+0	8.7E+0	1.5E+1	1.8E+0	5.9E+0	1.2E+1	7.8E-1	3.1E+1	1.2E+2
IODINE	1.6E+0	2.8E+0	4.1E+0	5.5E+0	9.0E+0	1.8E+1	1.9E-1	8.2E+0	1.7E+1
CESIUM	2.9E+1	1.4E+2	3.0E+2	3.6E+0	1.0E+1	1.6E+1	4.7E+0	8.9E+0	1.8E+1
BARIUM	3.9E+2	5.6E+4	2.9E+5	5.6E+2	1.1E+3	1.8E+3	7.9E+1	1.1E+3	4.8E+3
LANTHANUM	2.5E+1	3.4E+2	7.5E+2	4.6E+1	8.4E+1	1.4E+2	4.9E+0	3.2E+1	6.7E+1
CERIUM	7.2E+1	5.3E+2	1.1E+3	6.0E+1	2.0E+2	3.6E+2	1.4E+1	1.5E+2	6.4E+2
PRASEODYMIUM	6.4E+0	5.4E+1	1.1E+2	1.8E+1	3.6E+1	5.1E+1	6.6E+0	1.7E+1	4.3E+1
NEODYMIUM	2.2E+1	1.9E+2	5.9E+2	5.6E+1	9.5E+1	1.8E+2	1.1E+1	8.6E+1	1.8E+2
SAMARIUM	1.3E+1	4.5E+1	7.6E+1	1.5E+1	2.9E+1	3.7E+1	6.0E+0	3.4E+1	8.0E+1
EUROPIUM	8.0E+0	2.7E+1	7.4E+1	5.0E+0	7.0E+0	9.7E+0	1.5E+0	2.1E+1	4.9E+1

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

RANGE IN DATA - μG/DRY SCM

	SPREADER W/REINJ. FROM D.C. LOW	AVERAGE	HIGH	SPREADER, NO REINJ FROM D.C. LOW	AVERAGE	HIGH	MASS FIRED OVERFEED LOW	AVERAGE	HIGH
GADOLINIUM	9.7E+0	4.3E+1	1.5E+2	1.2E+1	2.2E+1	3.7E+1	2.9E+0	3.1E+1	8.0E+1
TERBIUM	4.1E+0	9.5E+0	1.5E+1	2.1E+0	3.8E+0	5.6E+0	8.6E-1	7.6E+0	1.6E+1
DYSPROSIUM	1.0E+1	4.2E+1	7.5E+1	1.4E+1	4.3E+1	7.6E+1	2.6E+0	3.0E+1	8.0E+1
HOLMIUM	4.2E+0	7.7E+0	1.0E+1	4.7E+0	6.0E+0	8.9E+0	1.3E+0	7.9E+0	1.7E+1
ERBIUM	1.2E+1	1.5E+1	1.8E+1	7.8E+0	1.4E+1	2.6E+1	1.9E+0	2.5E+1	7.3E+1
THULIUM	1.5E+0	1.8E+1	3.3E+1	6.5E-1	1.7E+0	2.9E+0	2.3E-1	2.1E+1	3.6E+1
YTTERBIUM	9.5E+0	1.4E+1	1.8E+1	8.1E+0	1.0E+1	1.8E+1	2.0E+0	2.2E+1	6.5E+1
LUTETIUM	1.3E+0	2.8E+0	4.2E+0	7.9E-1	1.0E+0	1.2E+0	2.3E-1	6.4E+0	1.7E+1
HAFNIUM	1.7E+0	1.0E+1	1.7E+1	2.5E+0	8.4E+0	1.5E+1	1.6E+0	2.1E+1	6.2E+1
TANTALUM	2.8E+1	4.4E+1	5.4E+1	5.9E+0	9.2E+0	1.9E+1	2.0E+0	3.9E+1	7.8E+1
TUNGSTEN	1.4E+1	2.0E+1	2.7E+1	2.4E+0	6.3E+0	1.1E+1	1.3E+1	3.8E+1	7.7E+1
RHENIUM	4.9E+0	6.0E+0	6.7E+0	1.4E+0	2.0E+0	3.2E+0	4.8E-1	1.4E+1	3.6E+1
OSMIUM	3.7E+0	1.1E+1	1.8E+1	1.7E+0	3.1E+0	6.8E+0	6.6E-1	2.1E+1	6.0E+1
IRIDIUM	4.5E+0	7.0E+0	9.1E+0	9.5E-1	1.8E+0	3.2E+0	4.8E-1	1.4E+1	3.6E+1
PLATINUM	3.6E+0	2.9E+1	7.8E+1	9.5E-1	1.8E+0	3.2E+0	7.8E-1	2.2E+1	6.0E+1
GOLD	1.2E+0	7.1E+0	1.6E+1	6.4E-1	1.1E+0	2.0E+0	1.8E-1	8.8E+0	2.4E+1
MERCURY	8.4E-1	4.2E+0	1.5E+1	1.5E+0	3.1E+0	6.1E+0	9.4E-3	1.2E+0	2.3E+0
THALLIUM	9.1E-1	2.6E+1	4.4E+1	8.6E+0	2.6E+1	5.6E+1	6.1E+1	1.1E+2	1.9E+2
LEAD	3.5E+1	4.1E+2	1.0E+3	1.1E+2	2.0E+2	3.4E+2	3.9E+1	6.7E+2	1.5E+3
BISMUTH	2.1E+0	1.7E+1	3.2E+1	5.9E-1	2.4E+0	4.1E+0	1.8E+0	1.2E+1	2.5E+1
THORIUM	8.6E+0	1.8E+1	3.1E+1	1.1E+1	1.8E+1	3.4E+1	2.2E+0	2.1E+1	6.1E+1
URANIUM	1.1E+1	1.9E+1	3.1E+1	1.5E+1	2.5E+1	4.2E+1	6.5E+0	1.7E+1	4.0E+1
PHENANTHRENE	7.7E-1	9.6E+0	1.9E+1	3.7E-1	5.5E+0	2.6E+1	2.1E-1	9.4E+0	5.9E+1
ANTHRACENE	3.6E-2	2.9E-1	5.8E-1	1.0E-1	1.9E-1	3.6E-1	6.2E-2	8.5E+0	5.8E+1
METHYLANTHRACENES/PHENANTHRENES	5.6E-2	6.6E-1	1.7E+0	1.5E-1	2.6E+0	1.3E+1	2.3E-1	8.4E-1	2.2E+0
FLUORANTHENE	6.7E-2	2.5E+0	5.1E+0	8.9E-2	1.2E+0	5.8E+0	6.5E-2	8.6E+0	5.8E+1
PYRENE	9.0E-2	8.6E-1	1.5E+0	6.1E-2	3.3E-1	5.9E-1	1.7E-1	3.7E-1	7.0E-1
METHYLPYRENE/FLUORANTHENE	3.3E-2	2.1E-1	6.4E-1	5.6E-2	2.4E-1	9.1E-1	2.8E-2	1.2E-1	2.5E-1
BENZO(C)PHENANTHRENE	2.7E-2	6.9E-2	1.3E-1	3.5E-2	7.3E-2	9.2E-2	7.0E-2	9.3E-2	1.2E-1
BENZ(A)ANTHRACENE	5.6E-2	1.0E-1	1.3E-1	2.3E-2	4.3E-2	8.0E-2	2.8E-2	7.1E-2	1.6E-1
CHRYSENE	7.6E-2	1.5E-1	2.7E-1	2.8E-2	1.4E-1	2.8E-1	2.8E-2	1.2E-1	2.8E-1
METHYLCHRYSENES	2.7E-2	5.1E-2	7.1E-2	2.3E-2	5.7E-2	1.4E-1	2.8E-2	5.9E-2	1.2E-1
DIMETHYLBENZANTHRACENES	2.8E-2	2.8E-2	2.8E-2						
BENZOFLUORANTHENES	2.8E-2	1.3E-1	3.2E-1	2.8E-2	7.5E-2	1.8E-1	2.8E-2	9.8E-2	2.6E-1
BENZO(E)PYRENE	2.8E-2	4.4E-2	5.3E-2	2.3E-2	6.2E-2	1.4E-1	2.8E-2	4.7E-2	1.1E-1
BENZO(A)PYRENE	2.5E-2	3.9E-2	5.3E-2	2.3E-2	2.3E-2	2.3E-2	2.8E-2	4.3E-2	5.8E-2
PERYLENE	2.5E-2	3.6E-2	5.3E-2	2.3E-2	3.1E-2	4.3E-2	2.8E-2	4.3E-2	5.8E-2
INDENO(1,2,3-CD)PYRENE	2.5E-2	5.5E-2	8.4E-2	2.8E-2	1.0E-1	2.6E-1	5.7E-2	6.1E-2	7.0E-2
BENZO(G,H,I)PERYLENE	2.5E-2	2.5E-2	2.5E-2	2.8E-2	1.2E-1	3.7E-1	4.4E-2	9.3E-2	1.6E-1
3-METHYLCHOLANTHRENE							2.8E-2	2.8E-2	2.8E-2
DIBENZPYRENES				2.3E-2	4.7E-2	8.6E-2	4.7E-2	4.7E-2	4.7E-2
CORONENE				2.7E-2	7.1E-2	1.5E-1	2.8E-2	2.9E-2	3.8E-2

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

APPENDIX C

COMPUTER GENERATED TABLES OF INORGANIC TRACE ELEMENT AND PAH EMISSIONS IN UNITS OF q/Kg FUEL INPUT

	Page		Page		Page
Lithium	250	Niobium	282	Osmium	314
Beryllium	251	Molybdenum	283	Iridium	315
Boron	252	Ruthenium	284	Platinum	316
Fluorine	253	Rhodium	285	Gold	317
Sodium	254	Paladium	286	Mercury	318
Magnesium	255	Silver	287	Thallium	319
Aluminium	256	Cadmium	288	Lead	320
Silicon	257	Indium	289	Bismuth	321
Phosphorus	258	Tin	290	Thorium	322
Sulfur	259	Antimony	291	Uranium	323
Chlorine	260	Tellurium	292	Phenanthrene	324
Potassium	261	Iodine	293	Anthracene	325
Calcium	262	Cesium	294	Methylanthracenes/Phenanthrenes	326
Scandium	263	Barium	295	Fluoranthene	327
Titanium	264	Lanthanum	296	Pyrene	328
Vanadium	265	Cerium	297	Methylpyrene/Fluoranthene	329
Chromium	266	Praseodymium	298	Benzo(c)phenanthrene	330
Manganese	267	Neodymium	299	Benz(a)anathracene	331
Iron	268	Samarium	300	Chrysene	332
Cobalt	269	Europium	301	Methylchrysenes	333
Nickel	270	Gadolinium	302	Dimethylbenzanthracenes	334
Copper	271	Terbium	303	Benzfluoranthenes	335
Zinc	272	Dysprosium	304	Benzo(e)pyrene	336
Gallium	273	Holmium	305	Benzo(a)pyrene	337
Germanium	274	Erbium	306	Perylene	338
Arsenic	275	Thulium	307	Indeno(1,2,3-cd)pyrene	339
Selenium	276	Ytterbium	308	Benzo(g,h,i)perylene	340
Bromine	277	Lutetium	309	3-Methychlolanthrene	341
Rubidium	278	Hafnium	310	Dibendzpyrenes	342
Strontium	279	Tantalum	311	Coronene	343
Yttrium	280	Tungsten	312		
Zirconium	281	Rhenium	313	SUMMARY	344

LITHIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS - G/KG FUEL: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
B 33	6.0	2710	7.7E-6	1.0E-3	1.2E-5	1.1E-4	1.1E-3	8.6E-4	1.3E-4	1.3E-4
B 31	6.0	2670	7.7E-6	7.5E-4	1.3E-5	1.1E-4	8.9E-4	6.9E-4	1.3E-4	1.3E-4
B 33	6.1	2130	7.3E-6	1.6E-3	1.3E-5	3.7E-4	2.0E-3	1.6E-3	4.0E-4	3.9E-4
C 44	6.9	4380	2.3E-2	7.2E-5	5.3E-7	0.0	2.3E-2	2.1E-3	1.6E-4	3.5E-5
C 45	6.3	4360	2.8E-2	8.1E-5	2.6E-6	0.0	2.8E-2	2.5E-3	2.0E-4	4.5E-5
C 46	9.0	3230	2.7E-2	1.4E-4	1.6E-6	0.0	2.8E-2	2.5E-3	1.9E-4	4.3E-5
AVERAGE			1.3E-2	6.0E-4	7.2E-6	1.0E-4	1.4E-2	1.7E-3	2.0E-4	1.3E-4
HIGH			2.8E-2	1.6E-3	1.3E-5	3.7E-4	2.8E-2	2.5E-3	4.0E-4	3.9E-4
LOW			7.3E-6	7.2E-5	5.3E-7	1.1E-4	8.9E-4	6.9E-4	1.3E-4	3.5E-5

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS - G/KG FUEL: 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	13.2	2070	1.2E-4	1.2E-4	0.0	0.0	2.4E-4	6.9E-5	1.7E-6	3.6E-6
E 16	8.3	2760	7.7E-5	9.1E-6	1.4E-6	0.0	8.7E-5	8.9E-6	2.0E-6	1.7E-6
E 17	6.2	2770	1.7E-4	5.5E-5	8.1E-7	0.0	2.2E-4	3.7E-5	2.4E-6	1.7E-6
F 22	6.0	2980	2.1E-4	7.2E-5	3.6E-6	0.0	2.8E-4	5.8E-5	5.5E-6	4.7E-6
F 30	6.8	2830	1.9E-4	2.0E-5	2.3E-7	0.0	2.1E-4	1.7E-5	1.7E-6	1.1E-6
G 15	8.7	3230	1.3E-3	2.2E-4	4.1E-7	0.0	1.5E-3	1.6E-4	1.1E-5	6.3E-6
G 20	9.2	2320	5.2E-4	2.0E-4	3.8E-6	0.0	7.2E-4	1.3E-4	8.8E-6	6.7E-6
H 11	3.4	1960	7.3E-5	1.5E-5	2.1E-6	0.0	9.0E-5	1.3E-5	2.7E-6	3.4E-6
I 09	5.9	2700	5.2E-4	1.5E-4	1.4E-4	0.0	8.1E-4	2.4E-4	1.5E-4	1.5E-4
I 18	7.8	1670	3.3E-4	3.5E-4	1.1E-5	2.1E-5	7.2E-4	2.4E-4	3.7E-5	4.3E-5
J 15	7.9	1550	1.4E-5	3.1E-4	4.7E-6	1.8E-5	3.5E-4	3.5E-4	2.5E-5	2.7E-5
J 16	8.9	2570	6.6E-6	2.8E-5	3.6E-6	0.0	3.8E-5	3.8E-5	3.9E-6	4.2E-6
K 18	9.8	1280	1.5E-4	0.0	4.1E-6	3.4E-6	1.6E-4	1.2E-5	8.5E-6	1.0E-5
AVERAGES										
SPREADER,NO REINJ FROM D.C.			4.0E-4	1.0E-4	1.7E-6	0.0	5.8E-4	6.7E-5	5.2E-6	3.7E-6
MASS FIRED OVERFEED			1.7E-4	1.4E-4	2.4E-5	6.1E-6	3.4E-4	1.4E-4	3.2E-5	3.5E-5
HIGH			1.3E-3	3.5E-4	1.4E-4	2.1E-5	1.5E-3	3.5E-4	1.5E-4	1.5E-4
LOW			6.6E-6	9.1E-6	2.3E-7	3.4E-6	3.8E-5	8.9E-6	1.7E-6	1.1E-6

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

BERYLLIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210					2.3E-6			
A 35	6.0	3140					2.5E-5			
B 30	6.0	2710	3.8E-5	6.4E-5	6.2E-8	1.1E-6	1.0E-4	5.2E-5	1.9E-6	1.3E-6
B 31	6.0	2670	2.3E-4	6.9E-5	4.3E-8	1.1E-6	3.0E-4	7.3E-5	3.3E-6	1.6E-6
B 33	6.1	2130	5.8E-4	1.1E-4	4.4E-8	1.2E-6	7.0E-4	1.4E-4	6.2E-6	2.3E-6
C 44	8.9	4380	1.5E-4	3.4E-6	2.6E-9	0.0	1.6E-4	1.6E-5	1.1E-6	2.4E-7
C 45	8.3	4360	3.5E-4	4.3E-6	2.6E-9	2.0E-6	3.6E-4	3.6E-5	4.5E-6	2.5E-6
C 46	8.0	3230	4.6E-4	1.1E-5	4.0E-9	0.0	4.7E-4	4.9E-5	3.3E-6	7.1E-7
AVERAGE			2.3E-4	3.3E-5	2.0E-8	6.9E-7	2.6E-4	4.9E-5	5.9E-6	4.5E-6
HIGH			5.8E-4	1.1E-4	6.2E-8	2.0E-6	7.0E-4	1.4E-4	2.5E-5	2.5E-5
LOW			3.8E-5	3.4E-6	2.6E-9	1.1E-6	2.3E-6	2.3E-6	1.1E-6	2.4E-7

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 10.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	8.8E-6	4.8E-5	0.0	0.0	4.9E-5	2.2E-5	3.4E-7	7.3E-7
E 16	8.3	2760	5.7E-5	9.1E-6	1.7E-8	0.0	6.7E-5	6.9E-6	4.8E-7	2.8E-7
E 17	6.2	2770	1.3E-5	1.8E-5	1.2E-8	0.0	3.7E-5	1.1E-5	2.7E-7	1.6E-7
F 22	6.0	2980	6.8E-5	1.0E-5	5.7E-8	0.0	7.8E-5	7.5E-6	6.0E-7	3.7E-7
F 30	6.8	2890	1.9E-4	9.0E-6	1.2E-7	0.0	2.0E-4	1.1E-5	1.5E-6	9.1E-7
G 15	8.7	3230	3.8E-5	1.0E-5	1.6E-6	0.0	5.8E-5	8.5E-6	2.1E-6	1.9E-6
G 24	9.2	2320	5.2E-5	3.9E-6	3.2E-7	0.0	5.6E-5	4.1E-6	7.1E-7	5.4E-7
H 11	9.4	1940	2.4E-4	1.1E-5	8.5E-8	0.0	2.5E-4	1.4E-5	1.9E-6	3.9E-6
I 39	9.9	2700	1.3E-4	2.2E-5	4.7E-6	0.0	1.3E-4	2.0E-5	5.6E-6	6.6E-6
I 18	7.8	1670	1.3E-4	3.5E-5	1.1E-6	3.6E-7	1.7E-4	2.5E-5	2.7E-6	4.0E-6
J 15	7.9	1550	1.1E-5	1.9E-5	9.4E-7	1.2E-6	3.2E-5	3.2E-5	2.3E-6	2.6E-6
J 16	8.9	2570	1.1E-6	3.4E-5	9.1E-7	2.9E-7	3.6E-5	3.6E-5	1.4E-6	1.7E-6
K 18	9.8	1260	2.5E-5	0.0	4.5E-7	2.3E-6	2.7E-5	3.5E-6	2.9E-6	3.1E-6
AVERAGES										
SPREADER, NO REINJ FROM D.C.			7.8E-5	1.0E-5	3.8E-7	0.0	8.1E-5	8.1E-6	9.4E-7	7.0E-7
MASS FIRED OVERFEED			7.5E-5	2.3E-5	1.2E-6	5.9E-7	1.0E-4	2.2E-5	2.4E-6	3.2E-6
HIGH			2.4E-4	4.0E-5	4.7E-6	2.3E-6	2.9E-4	3.6E-5	5.6E-6	6.6E-6
LOW			1.1E-6	3.9E-6	1.2E-8	2.9E-7	2.7E-5	3.5E-6	2.7E-7	1.6E-7

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

BORON

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210					3.1E-3			
A 35	6.0	3140					4.9E-5			
B 30	6.0	2710	1.5E-3	8.1E-4	3.8E-4	3.3E-5	2.7E-3	1.2E-3	4.3E-4	4.1E-4
B 31	6.0	2670	4.6E-3	5.6E-4	1.3E-3	3.4E-5	6.5E-3	2.1E-3	1.3E-3	1.3E-3
B 33	6.1	2130	4.4E-3	8.3E-4	1.3E-3	3.7E-5	6.5E-3	2.3E-3	1.4E-3	1.3E-3
C 44	6.9	4360	6.1E-2	1.7E-3	7.9E-6	6.0E-4	6.3E-2	7.2E-3	1.0E-3	7.0E-4
C 45	8.3	4360	7.1E-2	1.4E-3	1.6E-5	6.0E-4	7.3E-2	7.9E-3	1.1E-3	7.2E-4
C 46	9.0	3230	1.8E-2	1.4E-3	1.2E-4	0.0	2.0E-2	2.7E-3	2.6E-4	1.5E-4
AVERAGE			2.0E-2	8.3E-4	3.9E-4	1.6E-4	2.2E-2	3.3E-3	1.1E-3	1.0E-3
HIGH			7.1E-2	1.7E-3	1.3E-3	6.0E-4	7.3E-2	7.9E-3	3.1E-3	3.1E-3
LOW			1.5E-3	5.6E-4	7.9E-6	3.3E-5	4.9E-5	4.9E-5	4.9E-5	4.9E-5

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	4.9E-4	2.4E-3	0.0	0.0	2.9E-3	1.4E-3	2.0E-5	4.4E-5
E 16	6.3	2760	7.7E-4	2.1E-4	1.4E-3	0.0	2.4E-3	1.5E-3	1.4E-3	1.4E-3
E 17	6.2	2770	5.6E-4	7.4E-4	8.1E-6	0.0	1.3E-3	4.3E-4	1.7E-5	1.3E-5
F 22	6.0	2980	2.1E-4	1.0E-4	7.1E-5	0.0	3.7E-4	1.3E-4	7.4E-5	7.3E-5
F 30	6.8	2890	1.9E-4	4.5E-5	4.0E-5	0.0	2.7E-4	7.1E-5	4.2E-5	4.1E-5
G 15	8.7	3230	6.3E-4	3.3E-4	1.2E-3	0.0	2.1E-3	1.4E-3	1.2E-3	1.2E-3
G 23	9.2	2320	8.6E-4	2.0E-4	6.4E-4	0.0	1.7E-3	7.7E-4	6.4E-4	6.4E-4
H 11	9.4	1980	1.6E-3	1.5E-4	3.8E-4	0.0	2.1E-3	5.1E-4	3.9E-4	4.1E-4
I 09	5.9	2700	1.6E-3	2.2E-3	4.7E-2	0.0	5.1E-2	4.8E-2	4.7E-2	4.7E-2
I 10	7.8	1670	1.3E-3	7.1E-4	2.3E-2	6.4E-5	2.5E-2	2.3E-2	2.3E-2	2.3E-2
J 15	7.9	1550	1.4E-4	1.9E-3	9.4E-3	5.9E-7	1.1E-2	1.1E-2	9.4E-3	9.4E-3
J 16	6.9	2570	4.0E-6	1.7E-3	2.3E-2	1.7E-5	2.4E-2	2.4E-2	2.3E-2	2.3E-2
K 18	9.8	1280	1.5E-3	0.0	4.5E-3	3.4E-4	6.4E-3	4.9E-3	4.9E-3	4.9E-3
AVERAGES										
SPREADER, NO REINJ FROM D.C.			5.3E-4	2.7E-4	5.5E-4	0.0	1.4E-3	7.2E-4	5.6E-4	5.5E-4
MASS FIRED OVERFEED			9.5E-4	1.3E-3	1.5E-2	6.1E-5	1.8E-2	1.6E-2	1.5E-2	1.5E-2
HIGH			1.6E-3	2.4E-3	4.7E-2	3.4E-4	5.1E-2	4.8E-2	4.7E-2	4.7E-2
LOW			4.0E-6	4.5E-5	8.1E-6	5.9E-7	2.7E-4	7.1E-5	1.7E-5	1.3E-5

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

FLUORINE

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	3.8E-5	1.8E-5	2.5E-5	4.5E-4	5.3E-4	4.9E-4	4.7E-4	4.7E-4
B 31	6.0	2670	7.7E-5	1.0E-5	6.4E-5	4.6E-4	6.1E-4	5.4E-4	5.2E-4	5.2E-4
B 33	6.1	2130	7.3E-5	1.8E-5	1.3E-5	5.0E-5	1.5E-4	9.3E-5	6.4E-5	6.3E-5
C 44	8.9	4380	2.3E-4	2.9E-5	1.3E-5	6.6E-6	2.8E-4	6.1E-5	2.2E-5	2.0E-5
C 45	8.3	4360	2.1E-4	4.0E-5	1.6E-5	4.0E-5	3.1E-4	1.0E-4	5.8E-5	5.6E-5
C 46	9.0	3230	1.8E-4	7.3E-5	7.9E-7	0.0	2.6E-4	7.2E-5	2.6E-6	1.2E-6
AVERAGE			1.4E-4	3.1E-5	2.2E-5	1.7E-4	3.6E-4	2.2E-4	1.9E-4	1.9E-4
HIGH			2.3E-4	7.3E-5	6.4E-5	4.6E-4	6.1E-4	5.4E-4	5.2E-4	5.2E-4
LOW			3.8E-5	1.0E-5	7.9E-7	6.6E-6	1.5E-4	6.1E-5	2.6E-6	1.2E-6

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	2.4E-5	1.0E-5	0.0	0.0	3.4E-5	6.0E-6	2.4E-7	5.1E-7
E 16	8.3	2760	3.8E-5	4.6E-6	1.4E-5	0.0	5.7E-5	1.8E-5	1.4E-5	1.4E-5
E 17	6.2	2770	1.7E-4	1.7E-5	2.4E-6	0.0	1.9E-4	1.7E-5	3.7E-6	3.2E-6
F 22	6.0	2980	4.1E-5	2.4E-5	3.6E-5	0.0	1.0E-4	5.0E-5	3.6E-5	3.6E-5
F 30	6.8	2890	2.8E-5	2.3E-5	1.2E-5	0.0	6.2E-5	2.5E-5	1.2E-5	1.2E-5
G 15	8.7	3230	3.8E-5	3.3E-5	1.2E-5	0.0	8.3E-5	3.1E-5	1.2E-5	1.2E-5
G 20	9.2	2320	1.7E-5	1.0E-5	2.5E-5	0.0	5.2E-5	3.1E-5	2.6E-5	2.6E-5
H 11	9.4	1980	1.6E-5	2.2E-6	3.8E-5	0.0	5.6E-5	4.0E-5	3.8E-5	3.8E-5
I 09	5.9	2760	3.7E-5	1.5E-5	9.4E-4	0.0	1.0E-3	1.0E-3	9.4E-4	9.4E-4
I 16	7.8	1670	2.7E-5	2.4E-5	5.7E-5	1.4E-4	2.5E-4	2.1E-4	2.0E-4	2.0E-4
J 15	7.9	1550	2.8E-6	6.2E-6	4.7E-5	5.9E-5	1.2E-4	1.2E-4	1.1E-4	1.1E-4
J 16	8.9	2570	9.3E-7	5.6E-6	9.1E-5	5.7E-5	1.5E-4	1.5E-4	1.5E-4	1.5E-4
K 18	9.8	1280	2.0E-5	0.0	4.5E-4	4.6E-4	9.3E-4	9.1E-4	9.1E-4	9.1E-4
AVERAGES										
SPREADER,NO REINJ FROM D.C.			5.5E-5	1.8E-5	1.7E-5	0.0	9.0E-5	2.9E-5	1.7E-5	1.7E-5
MASS FIRED OVERFEED			1.8E-5	8.9E-6	2.3E-4	1.8E-4	3.6E-4	3.4E-4	3.4E-4	3.4E-4
HIGH			1.7E-4	3.3E-5	9.4E-4	4.6E-4	1.0E-3	1.0E-3	9.4E-4	9.4E-4
LOW			9.3E-7	2.2E-6	2.4E-6	5.7E-5	3.4E-5	6.0E-6	2.4E-7	5.1E-7

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

SODIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J SODIUM	EMISSIONS G/KG FUEL: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	15.5	3.1E-2	2.4E-2	1.3E-2	1.1E-1	1.8E-1	1.4E-1	1.2E-1	1.2E-1
B 31	6.0	2670	12.5	3.1E-2	1.2E-2	4.5E-2	1.1E-1	2.0E-1	1.7E-1	1.6E-1	1.6E-1
B 33	6.1	2130	7.4	7.3E-2	1.8E-2	1.3E-2	2.5E-2	1.3E-1	5.8E-2	3.9E-2	3.8E-2
C 44	8.9	4380	14.6	4.6E-1	2.2E-2	2.6E-3	3.3E-3	4.9E-1	6.3E-2	9.3E-3	6.7E-3
C 45	8.3	4360	19.4	7.1E-1	4.3E-2	2.6E-3	2.7E-3	7.5E-1	1.0E-1	1.1E-2	6.4E-3
C 46	9.0	3230	14.4	5.5E-1	7.0E-2	2.4E-3	5.0E-3	6.3E-1	1.1E-1	1.2E-2	8.3E-3
AVERAGE				3.1E-1	3.2E-2	1.3E-2	4.4E-2	4.0E-1	1.1E-1	5.9E-2	5.7E-2
HIGH				7.1E-1	7.0E-2	4.5E-2	1.1E-1	7.5E-1	1.7E-1	1.6E-1	1.6E-1
LOW				3.1E-2	1.2E-2	2.4E-3	2.7E-3	1.3E-1	5.8E-2	9.3E-3	6.4E-3

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J SODIUM	EMISSIONS G/KG FUEL: 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	8.3	7.3E-3	2.5E-2	0.0	0.0	3.2E-2	1.4E-2	2.3E-4	4.8E-4
E 16	8.3	2760	5.1	1.9E-3	6.9E-4	3.5E-4	0.0	2.9E-3	7.8E-4	3.6E-4	3.6E-4
E 17	6.2	2770	5.3	1.9E-2	5.5E-3	8.1E-4	0.0	2.5E-2	4.5E-3	1.8E-3	9.1E-4
F 22	6.0	2980	7.7	6.8E-3	7.2E-3	5.0E-3	0.0	1.9E-2	9.2E-3	5.1E-3	5.1E-3
F 33	6.8	2890	9.4	3.8E-3	9.0E-3	1.2E-3	0.0	1.4E-2	6.2E-3	1.2E-3	1.2E-3
G 15	8.7	3230	11.5	1.3E-1	2.2E-2	3.5E-3	0.0	1.5E-1	2.0E-2	4.5E-3	4.1E-3
G 23	9.2	2320	5.3	1.7E-2	2.0E-2	1.9E-3	0.0	3.9E-2	1.3E-2	2.2E-3	2.0E-3
H 11	3.4	1980	3.4	2.4E-2	1.1E-3	8.5E-3	0.0	3.4E-2	1.0E-2	8.6E-3	8.8E-3
I 09	5.9	2700	6.6	5.2E-2	3.7E-2	2.8E-3	0.0	9.2E-2	2.5E-2	3.4E-3	4.2E-3
I 18	7.8	1670	11.9	6.7E-3	1.2E-1	3.4E-3	3.6E-4	1.3E-1	6.9E-2	4.6E-3	5.6E-3
J 15	7.9	1550	9.2	2.8E-3	6.2E-3	2.4E-2	5.9E-2	9.2E-2	9.2E-2	8.3E-2	8.3E-2
J 16	8.9	2570	6.7	2.6E-3	2.8E-2	2.3E-2	0.0	5.3E-2	5.3E-2	2.3E-2	2.3E-2
K 18	9.8	1280	2.4	3.0E-3	0.0	1.4E-2	1.7E-2	3.4E-2	3.1E-2	3.1E-2	3.1E-2
AVERAGES											
SPREADER,NO REINJ FROM D.C.				2.9E-2	1.1E-2	2.1E-3	0.0	4.2E-2	8.9E-3	2.4E-3	2.3E-3
MASS FIRED OVERFEED				1.4E-2	3.1E-2	1.1E-2	1.1E-2	6.6E-2	4.2E-2	2.2E-2	2.2E-2
HIGH				1.3E-1	1.2E-1	2.4E-2	5.9E-2	1.5E-1	9.2E-2	8.3E-2	8.3E-2
LOW				1.9E-3	6.9E-4	3.5E-4	3.6E-4	2.9E-3	7.8E-4	2.3E-4	3.6E-4

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

MAGNESIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J MAGNESIUM	*- - - EMISSIONS - G/KG FUEL * 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 33	6.0	2710	14.2	3.1E-2	1.5E-2	1.3E-3	5.6E-2	1.0E-1	7.1E-2	5.7E-2	5.7E-2
B 31	6.0	2670	16.9	7.7E-2	3.1E-2	3.2E-3	5.7E-2	1.7E-1	9.1E-2	6.1E-2	6.1E-2
B 33	6.1	2130	8.7	7.3E-2	2.7E-2	1.3E-3	2.5E-2	1.3E-1	5.3E-2	2.7E-2	2.6E-2
C 44	8.9	4380	95.2	3.8E+0	1.4E-1	2.6E-4	3.3E-3	3.9E+0	4.4E-1	3.1E-2	9.5E-3
C 45	8.3	4360	106.3	3.5E+0	4.7E-2	2.6E-4	1.3E-2	3.6E+0	3.6E-1	3.9E-2	1.9E-2
C 46	9.0	3230	17.6	4.6E+0	6.4E-2	7.9E-4	3.0E-2	4.7E+0	4.8E-1	6.3E-2	3.8E-2
AVERAGE				2.0E+0	5.3E-2	1.2E-3	3.1E-2	2.1E+0	2.5E-1	4.6E-2	3.5E-2
HIGH				4.6E+0	1.4E-1	3.2E-3	5.7E-2	4.7E+0	4.8E-1	6.3E-2	6.1E-2
LOW				3.1E-2	1.5E-2	2.6E-4	3.3E-3	1.0E-1	5.3E-2	2.7E-2	9.5E-3

• STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR •

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J MAGNESIUM	*- - - EMISSIONS - G/KG FUEL * 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
G 22	13.2	2070	10.7	4.9E-3	1.4E-3	0.0	0.0	6.3E-3	9.1E-4	4.4E-5	9.4E-5
E 16	8.3	2760	14.6	1.9E-3	1.6E-3	3.5E-5	0.0	3.5E-3	1.0E-3	5.9E-5	4.9E-5
E 17	6.2	2770	12.9	1.9E-2	1.3E-3	2.0E-5	0.0	2.0E-2	1.3E-3	1.6E-4	1.0E-4
F 22	6.0	2980	11.5	4.8E-3	1.7E-3	1.4E-4	0.0	6.6E-3	1.2E-3	1.9E-4	1.7E-4
F 30	6.8	2890	12.9	4.7E-3	2.3E-3	4.0E-4	0.0	7.4E-3	1.8E-3	4.5E-4	4.3E-4
G 15	8.7	3230	21.2	1.1E-1	8.9E-3	4.1E-4	0.0	1.2E-1	8.9E-3	1.3E-3	9.0E-4
G 20	9.2	2320	11.8	3.4E-2	7.8E-3	3.8E-4	0.0	4.3E-2	5.8E-3	6.8E-4	5.5E-4
H 11	9.4	1980	7.4	8.1E-3	3.7E-4	3.4E-4	0.0	8.8E-3	8.0E-4	4.8E-4	4.7E-4
I 09	5.9	2700	13.2	2.1E-2	3.0E-3	4.7E-4	0.0	2.4E-2	2.8E-3	6.4E-4	8.3E-4
I 16	7.8	1670	7.6	5.3E-3	1.2E-3	5.7E-4	7.1E-4	7.8E-3	2.1E-3	1.3E-3	1.4E-3
J 15	7.9	1550	7.3	1.1E-3	4.9E-4	4.7E-4	2.4E-3	4.5E-3	4.5E-3	2.9E-3	2.9E-3
J 16	8.9	2570	12.9	5.3E-4	1.1E-3	9.1E-4	0.0	2.6E-3	2.6E-3	9.2E-4	9.4E-4
K 18	9.8	1280	12.1	4.9E-2	0.0	2.3E-3	1.1E-2	6.3E-2	1.5E-2	1.4E-2	1.4E-2
AVERAGES											
SPREADER, NO REINJ FROM D.C.				3.0E-2	3.9E-3	2.3E-4	0.0	3.4E-2	3.3E-3	4.7E-4	3.7E-4
MASS FIRED OVERFEED				1.3E-2	1.1E-3	7.2E-4	2.1E-3	1.7E-2	4.1E-3	2.9E-3	3.0E-3
HIGH				1.1E-1	8.9E-3	2.3E-3	1.1E-2	1.2E-1	1.5E-2	1.4E-2	1.4E-2
LOW				5.3E-4	3.7E-4	2.0E-5	7.1E-4	2.6E-3	8.0E-4	4.4E-5	4.9E-5

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

ALUMINUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT OZ	INPUT NG/J TOTAL ASH	INPUT NG/J ALUMINUM	EMISSIONS G/KG FUEL 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	420.7	1.5E+0	7.8E-2	3.1E-3	1.1E-3	1.6E+0	2.0E-1	1.6E-2	6.7E-3
B 31	6.0	2670	444.1	5.4E-1	1.6E-1	1.9E-3	1.1E-3	7.3E-1	1.7E-1	7.9E-3	4.1E-3
B 33	6.1	2130	338.2	2.2E+0	2.7E-1	1.3E-3	1.2E-3	2.5E+0	4.0E-1	2.0E-2	6.2E-3
C 44	8.9	4380	381.0	2.3E+1	1.3E-1	2.6E-4	6.3E-3	2.3E+1	2.1E+0	1.7E-1	4.1E-2
C 45	8.3	4360	428.8	2.1E+1	1.2E-1	5.3E-4	2.3E-3	2.1E+1	2.0E+0	1.5E-1	3.5E-2
C 46	9.0	3230	370.4	2.7E+1	2.2E-1	3.6E-4	4.0E-2	2.8E+1	2.6E+0	2.3E-1	8.1E-2
AVERAGE				1.3E+1	1.6E-1	1.3E-3	8.6E-3	1.3E+1	1.2E+0	1.8E-1	2.9E-2
HIGH				2.7E+1	2.7E-1	3.1E-3	4.0E-2	2.8E+1	2.6E+0	2.3E-1	8.1E-2
LOW				5.4E-1	7.8E-2	2.6E-4	1.1E-3	7.0E-1	1.7E-1	7.9E-3	4.1E-3

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT OZ	INPUT NG/J TOTAL ASH	INPUT NG/J ALUMINUM	EMISSIONS G/KG FUEL 18.5 µM + 45.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2670	327.7	1.8E-1	3.7E-2	0.0	0.0	2.2E-1	2.6E-2	1.5E-3	3.3E-3
E 16	8.3	2760	529.0	3.8E-1	1.4E-1	3.5E-4	0.0	5.2E-1	6.8E-2	4.8E-3	2.4E-3
E 17	6.2	2770	463.9	3.7E-1	1.1E-1	3.2E-4	0.0	4.8E-1	7.3E-2	3.7E-3	2.3E-3
F 22	6.0	2980	515.3	2.1E+0	7.2E-2	1.4E-3	0.0	2.1E+0	1.1E-1	1.6E-2	1.0E-2
F 30	6.8	2690	499.1	1.4E+0	6.8E-2	1.2E-3	0.0	1.5E+0	8.4E-2	1.2E-2	7.1E-3
G 15	8.7	3230	538.2	4.4E+0	3.9E-1	1.8E-3	0.0	4.8E+0	3.6E-1	3.5E-2	2.1E-2
G 20	9.2	2320	463.8	6.0E+0	3.4E-1	1.9E-3	0.0	6.4E+0	3.8E-1	4.6E-2	2.7E-2
H 11	9.4	1980	244.6	1.6E-1	7.5E-3	1.7E-3	0.0	1.7E-1	1.1E-2	2.9E-3	4.2E-3
I 09	5.9	2700	329.5	7.8E-1	6.0E-2	1.4E-2	0.0	8.6E-1	7.2E-2	2.0E-2	2.7E-2
I 18	7.8	1670	223.5	1.0E+0	1.2E-1	5.7E-3	7.1E-7	1.1E+0	1.0E-1	1.3E-2	2.2E-2
J 15	7.9	1550	216.4	7.1E-2	1.9E-2	9.4E-3	0.0	1.0E-1	1.0E-1	1.0E-2	1.1E-2
J 16	8.9	2570	361.7	3.3E-2	1.7E-2	1.4E-2	0.0	6.4E-2	6.4E-2	1.4E-2	1.4E-2
K 18	9.8	1260	177.2	2.2E+0	0.0	4.5E-3	1.1E-2	2.2E+0	8.7E-2	3.2E-2	4.9E-2
AVERAGES											
SPREADER,NO REINJ FROM D.C.				2.4E+0	1.9E-1	1.2E-3	0.0	2.6E+0	1.8E-1	2.8E-2	1.2E-2
MASS FIRED OVERFEED				6.4E-1	3.7E-2	7.0E-3	1.6E-3	6.8E-1	6.6E-2	1.3E-2	1.9E-2
HIGH				6.8E+0	3.9E-1	1.4E-2	1.1E-2	6.4E+0	3.8E-1	4.6E-2	4.9E-2
LOW				3.3E-2	7.5E-3	3.2E-4	7.1E-7	6.4E-2	1.1E-2	1.5E-3	2.3E-3

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

SILICON

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J SILICON	*- - - EMISSIONS - G/KG FUEL * 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	705.8	1.5E+0	1.4E-1	6.3E-3	3.3E-3	1.7E+0	2.5E-1	2.1E-2	1.2E-2
B 31	6.0	2670	657.6	3.8E+0	3.1E-1	6.4E-3	3.4E-3	4.2E+0	5.8E-1	3.9E-2	1.6E-2
B 33	6.1	2130	539.3	2.2E+0	5.4E-1	1.9E-3	5.0E-3	2.7E+0	6.0E-1	2.6E-2	1.1E-2
C 44	8.9	4380	893.9	2.3E+1	1.2E-1	2.4E-3	2.0E-2	2.3E+1	2.1E+0	1.8E-1	5.7E-2
C 45	8.3	4360	889.6	2.1E+1	7.0E-2	7.9E-3	6.7E-3	2.1E+1	1.9E+0	1.6E-1	4.6E-2
C 46	9.0	3230	661.6	2.7E+1	1.9E-1	4.0E-4	4.0E-2	2.8E+1	2.6E+0	2.3E-1	8.2E-2
AVERAGE				1.3E+1	2.3E-1	4.2E-3	1.3E-2	1.3E+1	1.3E+0	1.1E-1	3.7E-2
HIGH				2.7E+1	5.4E-1	7.9E-3	4.0E-2	2.8E+1	2.6E+0	2.3E-1	8.2E-2
LOW				1.5E+0	7.0E-2	4.0E-4	3.3E-3	1.7E+0	2.5E-1	2.1E-2	1.1E-2

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J SILICON	*- - - EMISSIONS - G/KG FUEL * 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	481.3	1.8E-1	3.6E-2	0.0	0.0	2.2E-1	2.6E-2	1.5E-3	3.3E-3
E 16	8.3	2760	641.6	3.8E-1	1.1E-1	3.5E-3	0.0	5.0E-1	7.9E-2	6.9E-3	5.4E-3
E 17	6.2	2770	681.2	5.6E-1	1.8E-1	4.1E-4	0.0	7.4E-1	1.2E-1	5.6E-3	3.4E-3
F 22	6.0	2580	576.9	1.4E+0	4.8E-2	8.6E-3	0.0	1.4E+0	7.9E-2	1.8E-2	1.4E-2
F 30	6.8	2690	647.3	9.5E-1	4.5E-2	1.7E-3	0.0	1.0E+0	5.7E-2	8.7E-3	5.7E-3
G 15	8.7	3230	796.8	4.4E+0	3.9E-1	1.8E-3	0.0	4.8E+0	3.6E-1	3.5E-2	2.1E-2
G 20	9.2	2320	538.5	4.3E+0	3.4E-1	1.9E-3	0.0	4.6E+0	3.3E-1	3.4E-2	2.0E-2
H 11	9.4	1980	368.2	8.1E-2	7.5E-3	3.8E-3	0.0	9.2E-2	1.0E-2	4.4E-3	5.1E-3
I 09	5.9	2700	491.8	3.1E-1	1.9E-1	2.8E-2	0.0	5.3E-1	1.4E-1	3.2E-2	3.6E-2
I 18	7.8	1670	332.9	4.0E-1	4.7E-2	1.7E-2	2.9E-5	4.6E-1	5.6E-2	2.0E-2	2.4E-2
J 15	7.9	1550	318.5	7.1E-2	2.5E-2	2.4E-2	0.0	1.2E-1	1.2E-1	2.4E-2	2.5E-2
J 16	8.9	2570	510.3	3.3E-2	2.2E-2	2.3E-2	0.0	7.8E-2	7.8E-2	2.3E-2	2.4E-2
K 18	9.8	1260	228.7	7.4E-1	0.0	3.6E-3	1.1E-2	7.5E-1	3.9E-2	2.0E-2	2.6E-2
AVERAGES											
SPREADER,NO REINJ FROM D.C.				2.0E+0	1.9E-1	3.8E-3	0.0	2.2E+0	1.7E-1	1.8E-2	1.2E-2
MASS FIRED OVERFEED				2.6E-1	4.6E-2	1.4E-2	1.6E-3	3.2E-1	6.7E-2	1.8E-2	2.0E-2
HIGH				4.4E+0	3.9E-1	2.8E-2	1.1E-2	4.8E+0	3.6E-1	3.5E-2	3.6E-2
LOW				3.3E-2	7.5E-3	4.1E-4	2.9E-5	7.8E-2	1.0E-2	1.5E-3	3.3E-3

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

PHOSPHORUS

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL	ASH	PHOSPHORUS	EMISSIONS G/KG FUEL: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710		4.5	7.7E-3	1.1E-2	3.8E-5	1.1E-2	3.0E-2	2.0E-2	1.1E-2	1.1E-2
B 31	6.0	2670		5.1	2.3E-2	1.0E-2	3.8E-5	1.1E-2	4.5E-2	2.1E-2	1.2E-2	1.2E-2
B 33	6.1	2130		5.8	2.2E-2	1.5E-2	3.9E-5	5.0E-3	4.2E-2	1.8E-2	5.3E-3	5.1E-3
C 44	8.9	4380		4.0	1.5E-1	3.4E-3	2.6E-5	3.1E-2	1.9E-1	4.6E-2	3.2E-2	3.1E-2
C 45	8.3	4360		3.4	7.1E-2	2.2E-3	5.3E-4	1.0E-1	1.7E-1	1.1E-1	1.0E-1	1.0E-1
C 46	8.0	3230		3.0	9.1E-2	9.4E-3	2.4E-4	4.6E-2	1.5E-1	6.1E-2	4.7E-2	4.6E-2
AVERAGE					6.1E-2	8.7E-3	1.5E-4	3.4E-2	1.0E-1	4.6E-2	3.4E-2	3.4E-2
HIGH					1.5E-1	1.5E-2	5.3E-4	1.0E-1	1.9E-1	1.1E-1	1.0E-1	1.0E-1
LOW					7.7E-3	2.2E-3	2.6E-5	5.0E-3	3.0E-2	1.8E-2	5.3E-3	5.1E-3

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL	ASH	PHOSPHORUS	EMISSIONS G/KG FUEL: 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2670		3.2	7.3E-3	1.0E-2	0.0	0.0	1.7E-2	5.8E-3	1.2E-4	2.6E-4
E 16	8.3	2760		5.2	1.9E-3	2.1E-3	3.5E-5	0.0	4.0E-3	1.2E-3	6.2E-5	5.0E-5
E 17	6.2	2770		2.2	1.7E-2	3.7E-3	4.1E-6	0.0	2.0E-2	2.6E-3	1.5E-4	8.6E-5
F 22	6.0	2980		10.7	2.1E-2	2.2E-3	1.4E-4	0.0	2.3E-2	2.0E-3	3.0E-4	2.3E-4
F 30	6.8	2890		5.7	1.4E-2	2.0E-3	2.9E-5	0.0	1.6E-2	1.6E-3	1.4E-4	9.4E-5
G 15	8.7	3230		2.0	2.5E-3	1.1E-3	5.3E-5	0.0	3.7E-3	7.4E-4	7.8E-5	6.7E-5
G 20	9.2	2320		1.5	1.2E-3	4.9E-3	1.3E-4	0.0	6.2E-3	2.9E-3	1.7E-4	1.5E-4
H 11	9.4	1980		5.7	8.1E-3	1.5E-3	1.3E-4	0.0	1.0E-2	1.2E-3	1.9E-4	2.7E-4
I 09	9.9	2700		4.0	1.0E-2	1.5E-2	9.4E-4	0.0	2.6E-2	9.5E-3	1.1E-3	1.3E-3
I 18	7.8	1670		1.9	3.3E-3	7.1E-3	1.7E-4	7.1E-7	1.1E-2	4.2E-3	2.4E-4	3.3E-4
J 15	7.9	1550		2.1	5.7E-4	1.9E-2	4.7E-4	<1.0E-9	2.0E-2	2.0E-2	6.0E-4	7.6E-4
J 16	8.9	2570		4.5	6.6E-5	4.5E-3	1.8E-4	0.0	4.7E-3	4.7E-3	2.1E-4	2.5E-4
K 18	9.8	1280		0.6	2.0E-3	0.0	9.1E-4	2.9E-4	3.2E-3	1.3E-3	1.2E-3	1.2E-3
AVERAGES												
SPREADER, NO REINJ FROM D.C.					1.0E-2	2.7E-3	6.5E-5	0.0	1.2E-2	1.8E-3	1.5E-4	1.1E-4
MASS FIRED OVERFEED					4.5E-3	8.1E-3	4.0E-4	4.1E-5	1.3E-2	6.6E-3	5.3E-4	6.3E-4
HIGH					2.1E-2	1.9E-2	9.4E-4	2.9E-4	2.6E-2	2.0E-2	1.2E-3	1.3E-3
LOW					6.6E-5	1.1E-3	4.1E-6	<1.0E-9	3.2E-3	7.4E-4	6.2E-5	5.0E-5

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

SULFUR

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J SULFUR	*- - - E M I S S I O N S - G/KG FUEL * 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2718	282.7	3.1E-2	7.5E-2	1.9E-1	2.2E-2	3.2E-1	2.7E-1	2.1E-1	2.1E-1
B 31	6.0	2670	303.8	3.1E-2	4.3E-2	1.9E-1	2.3E-2	2.9E-1	2.5E-1	2.1E-1	2.1E-1
B 33	6.1	2130	248.7	7.3E-2	4.2E-2	1.9E-1	2.5E-2	3.4E-1	2.6E-1	2.2E-1	2.2E-1
C 44	8.9	4380	274.3	2.3E-1	4.8E-2	3.9E-2	2.7E-2	3.4E-1	1.2E-1	6.8E-2	6.6E-2
C 45	8.3	4360	274.3	2.1E-1	3.8E-2	4.0E-2	0.0	2.9E-1	8.7E-2	4.1E-2	4.0E-2
C 46	9.0	3230	860.5	3.7E-1	5.7E-2	1.8E-1	4.0E-2	6.4E-1	2.9E-1	2.2E-1	2.2E-1
AVERAGE				1.6E-1	5.0E-2	1.4E-1	2.3E-2	3.7E-1	2.1E-1	1.6E-1	1.6E-1
HIGH				3.7E-1	7.5E-2	1.9E-1	4.0E-2	6.4E-1	2.9E-1	2.2E-1	2.2E-1
LOW				3.1E-2	3.8E-2	3.9E-2	2.2E-2	2.9E-1	8.7E-2	4.1E-2	4.0E-2

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J SULFUR	*- - - E M I S S I O N S - G/KG FUEL * 10.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
O 22	10.2	2070	351.3	3.7E-3	7.1E-2	0.0	0.0	7.5E-2	3.9E-2	5.2E-4	1.1E-3
E 16	8.3	2760	254.6	5.7E-3	6.9E-4	3.5E-3	0.0	1.0E-2	4.0E-3	3.5E-3	3.5E-3
E 17	6.2	2770	281.1	1.7E-2	3.7E-3	2.0E-3	0.0	2.2E-2	4.6E-3	2.2E-3	2.1E-3
F 22	6.0	2980	476.0	6.2E-2	7.2E-4	1.1E-1	0.0	1.7E-1	1.1E-1	1.1E-1	1.1E-1
F 30	6.8	2890	313.5	2.8E-2	6.8E-4	5.8E-3	0.0	3.5E-2	7.0E-3	6.0E-3	5.9E-3
G 15	8.7	3230	230.9	2.5E-2	3.3E-3	3.8E+0	0.0	3.8E+0	3.8E+0	3.8E+0	3.8E+0
G 20	9.2	2320	230.5	1.5E-3	4.9E-2	3.8E+0	0.0	3.9E+0	3.8E+0	3.8E+0	3.8E+0
H 11	9.4	1980	581.8	1.6E-1	2.2E-4	3.4E-2	0.0	2.0E-1	3.9E-2	3.5E-2	3.6E-2
I 09	5.9	2730	606.9	1.6E-2	2.2E-2	3.2E+1	0.0	3.2E+1	3.2E+1	3.2E+1	3.2E+1
I 18	7.8	1670	408.3	1.3E-2	4.7E-2	3.7E+0	1.5E-4	3.7E+0	3.7E+0	3.7E+0	3.7E+0
J 15	7.9	1550	317.1	5.7E-3	1.9E-2	2.6E+0	1.2E-2	2.6E+0	2.6E+0	2.6E+0	2.6E+0
J 16	8.9	2570	668.8	2.6E-4	1.1E-2	4.1E+0	1.1E-2	4.1E+0	4.1E+0	4.1E+0	4.1E+0
K 18	9.8	1280	453.5	1.0E-2	0.0	6.8E-1	2.3E-1	9.2E-1	9.1E-1	9.1E-1	9.1E-1
AVERAGES											
SPREADER, NO REINJ FROM D.C.				2.3E-2	1.0E-2	1.3E+0	0.0	1.3E+0	1.3E+0	1.3E+0	1.3E+0
MASS FIRED OVERFEED				3.0E-2	2.4E-2	6.2E+0	3.6E-2	6.3E+0	6.2E+0	6.2E+0	6.2E+0
HIGH				1.6E-1	7.1E-2	3.2E+1	2.3E-1	3.2E+1	3.2E+1	3.2E+1	3.2E+1
LOW				2.6E-4	2.2E-4	2.0E-3	1.5E-4	1.0E-2	4.0E-3	5.2E-4	1.1E-3

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

CHLORINE

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J CHLORINE	*- - - E M I S S I O N S - G/KG FUEL * 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	35.7	5.4E-4	2.8E-5	1.9E-4	4.5E-3	5.2E-3	4.7E-3	4.6E-3	4.6E-3
B 31	6.0	2670	22.9	3.1E-4	3.1E-5	3.2E-4	4.6E-3	5.3E-3	5.0E-3	4.9E-3	4.9E-3
B 33	6.1	2130	47.2	1.5E-3	2.8E-5	5.2E-4	5.0E-3	7.0E-3	5.6E-3	5.5E-3	5.5E-3
C 44	6.9	4380	5.1	7.6E-4	7.7E-5	1.1E-5	0.0	8.5E-4	1.4E-4	1.6E-5	1.2E-5
C 45	8.3	4360	5.1	2.8E-3	3.3E-5	1.1E-5	0.0	2.9E-3	2.8E-4	3.1E-5	1.5E-5
C 46	9.0	3230	23.4	3.7E-3	7.6E-5	1.2E-5	0.0	3.7E-3	3.9E-4	3.8E-5	1.8E-5
AVERAGE				1.6E-3	4.5E-5	1.8E-4	2.3E-3	4.2E-3	2.7E-3	2.5E-3	2.5E-3
HIGH				3.7E-3	7.7E-5	5.2E-4	5.0E-3	7.0E-3	5.6E-3	5.5E-3	5.5E-3
LOW				3.1E-4	2.8E-5	1.1E-5	4.5E-3	8.5E-4	1.4E-4	1.6E-5	1.2E-5

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J CHLORINE	*- - - E M I S S I O N S - G/KG FUEL * 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	13.2	2070	19.2	1.2E-5	4.2E-4	0.0	0.0	4.4E-4	2.3E-4	3.1E-6	6.5E-6
E 16	8.3	2760	24.1	1.3E-5	1.6E-6	6.9E-3	0.0	6.9E-3	6.9E-3	6.9E-3	6.9E-3
E 17	6.2	2770	27.4	1.3E-5	1.3E-6	2.0E-6	0.0	1.6E-5	3.2E-6	2.1E-6	2.1E-6
F 22	6.0	2980	47.3	5.5E-5	1.9E-6	1.4E-4	0.0	2.0E-4	1.5E-4	1.4E-4	1.4E-4
F 30	6.8	2890	53.8	3.8E-5	4.5E-6	1.7E-3	0.0	1.8E-3	1.7E-3	1.7E-3	1.7E-3
G 15	8.7	3230	23.8	7.6E-5	4.4E-5	2.3E-5	0.0	1.4E-4	5.0E-5	2.4E-5	2.4E-5
G 20	9.2	2320	16.7	1.0E-4	2.0E-5	6.5E-5	0.0	1.9E-4	7.9E-5	6.6E-5	6.5E-5
H 11	9.4	1980	18.0	1.6E-5	3.0E-7	1.7E-4	0.0	1.9E-4	1.7E-4	1.7E-4	1.7E-4
I 09	5.9	2700	129.1	5.2E-5	3.0E-5	4.7E-9	0.0	8.2E-5	1.8E-5	5.8E-7	1.2E-6
I 18	7.8	1670	39.9	6.7E-8	1.2E-4	1.7E-4	7.1E-7	2.9E-4	2.4E-4	1.7E-4	1.7E-4
J 15	7.9	1550	40.0	2.8E-6	6.2E-6	9.4E-5	0.0	1.0E-4	1.0E-4	9.4E-5	9.4E-5
J 16	8.9	2570	62.8	1.3E-6	3.4E-6	1.8E-4	0.0	1.9E-4	1.9E-4	1.8E-4	1.8E-4
K 18	9.8	1280	22.8	1.0E-4	0.0	3.2E-4	1.7E-3	2.1E-3	2.0E-3	2.0E-3	2.0E-3
AVERAGES											
SPREADER,NO REINJ FROM D.C.				5.0E-5	1.2E-5	1.5E-3	0.0	1.5E-3	1.5E-3	1.5E-3	1.5E-3
MASS FIRED OVERFEED				2.6E-5	8.3E-5	1.3E-4	2.5E-4	4.9E-4	4.3E-4	3.8E-4	3.8E-4
HIGH				1.0E-4	4.2E-4	6.9E-3	1.7E-3	6.9E-3	6.9E-3	6.9E-3	6.9E-3
LOW				6.7E-8	3.0E-7	4.7E-9	7.1E-7	1.6E-5	3.2E-6	5.8E-7	1.2E-6

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

POTASSIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J POTASSIUM	*- - - EMISSIONS - G/KG FUEL * 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	48.4	2.3E-2	1.0E-2	3.8E-4	5.6E-3	3.9E-2	1.6E-2	6.2E-3	6.0E-3
B 31	6.0	2670	51.0	7.7E-2	7.2E-3	3.8E-4	2.3E-2	1.1E-1	3.6E-2	2.4E-2	2.4E-2
B 33	6.1	2130	21.8	3.6E-2	8.6E-3	6.5E-4	2.5E-2	7.1E-2	3.5E-2	2.6E-2	2.6E-2
C 44	8.9	4380	20.0	2.3E-1	1.0E-2	7.9E-5	0.0	2.4E-1	2.8E-2	1.7E-3	4.4E-4
C 45	8.3	4360	21.7	3.5E-1	6.5E-3	1.3E-4	0.0	3.6E-1	3.6E-2	2.6E-3	6.7E-4
C 46	9.0	3230	44.3	9.1E-2	1.7E-2	4.0E-4	0.0	1.1E-1	2.1E-2	1.2E-3	5.6E-4
AVERAGE				1.3E-1	1.0E-2	3.4E-4	8.9E-3	1.5E-1	2.8E-2	1.0E-2	9.5E-3
HIGH				3.5E-1	1.7E-2	6.5E-4	2.5E-2	3.6E-1	3.6E-2	2.6E-2	2.6E-2
LOW				2.3E-2	6.5E-3	7.9E-5	5.6E-3	3.9E-2	1.6E-2	1.2E-3	4.4E-4

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J POTASSIUM	*- - - EMISSIONS - G/KG FUEL * 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
O 22	13.2	2670	27.6	7.3E-2	6.1E-2	0.0	0.0	1.3E-1	3.6E-2	9.4E-4	2.0E-3
E 16	4.3	2760	47.4	3.8E-2	2.3E-3	3.1E-6	0.0	4.1E-2	2.5E-3	2.9E-4	1.7E-4
E 17	6.2	2770	43.2	7.4E-2	1.8E-2	2.0E-6	0.0	9.3E-2	1.3E-2	6.5E-4	3.7E-4
F 22	6.0	2980	39.3	2.7E-2	4.8E-2	1.4E-4	0.0	7.5E-2	2.7E-2	6.7E-4	4.4E-4
F 30	6.8	2890	51.5	1.9E-1	9.0E-3	3.5E-5	0.0	2.0E-1	1.1E-2	1.4E-3	8.3E-4
G 15	8.7	3230	66.2	1.3E-1	5.6E-2	3.5E-4	0.0	1.8E-1	3.5E-2	1.6E-3	1.1E-3
G 20	9.2	2320	29.5	3.4E-1	4.9E-2	6.5E-4	0.0	3.9E-1	3.9E-2	3.4E-3	2.2E-3
H 11	9.4	1580	28.6	8.1E-2	7.5E-3	1.3E-4	0.0	8.8E-2	6.8E-3	7.4E-4	1.4E-3
I 09	5.9	2700	43.3	1.6E-1	1.1E-1	1.4E-2	0.0	2.8E-1	8.1E-2	1.6E-2	1.8E-2
I 18	7.8	1670	20.6	6.7E-2	7.1E-2	5.7E-4	7.1E-7	1.4E-1	4.2E-2	1.5E-3	2.6E-3
J 15	7.9	1550	22.8	4.2E-2	1.2E-1	1.4E-4	1.8E-3	1.7E-1	1.7E-1	3.1E-3	4.4E-3
J 16	8.9	2570	40.7	2.8E-2	1.1E-1	4.1E-4	0.0	1.3E-1	1.3E-1	1.3E-3	2.4E-3
K 18	9.8	1280	18.5	1.5E-2	0.0	9.1E-4	4.6E-4	1.6E-2	1.8E-3	1.5E-3	1.6E-3
AVERAGES											
SPREADER,NO REINJ FROM D.C.				1.3E-1	3.0E-2	2.8E-4	0.0	1.6E-1	2.1E-2	1.3E-3	8.5E-4
MASS FIRED OVERFEED				6.5E-2	7.0E-2	2.3E-3	3.2E-4	1.4E-1	6.7E-2	3.6E-3	4.7E-3
HIGH				3.4E-1	1.2E-1	1.4E-2	1.8E-3	3.9E-1	1.7E-1	1.6E-2	1.8E-2
LOW				1.5E-2	2.3E-3	2.0E-6	7.1E-7	1.6E-2	1.8E-3	2.9E-4	1.7E-4

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

CALCIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J CALCIUM	EMISSIONS G/KG FUEL 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	27.1	2.3E-2	1.1E-2	4.4E-3	4.5E-2	8.2E-2	5.9E-2	4.9E-2	4.9E-2
B 31	6.0	2670	36.3	7.7E-2	1.2E-2	6.4E-3	1.1E-2	1.1E-1	3.4E-2	1.8E-2	1.8E-2
B 33	6.1	2130	30.5	7.3E-2	2.3E-2	6.5E-3	1.2E-2	1.1E-1	4.3E-2	2.0E-2	1.9E-2
C 44	8.9	4390	501.3	1.1E+1	1.5E-1	1.6E-3	6.6E-3	1.2E+1	1.1E+0	8.9E-2	2.6E-2
C 45	8.3	4360	399.2	1.1E+1	1.2E-1	1.9E-3	2.7E-2	1.1E+1	1.0E+0	1.0E-1	4.5E-2
C 46	9.0	3230	56.6	1.8E+0	7.9E-2	2.4E-3	1.0E-2	1.9E+0	2.3E-1	2.6E-2	1.5E-2
AVERAGE				4.0E+0	6.5E-2	3.8E-3	1.9E-2	4.1E+0	4.2E-1	5.1E-2	2.9E-2
HIGH				1.1E+1	1.5E-1	6.5E-3	4.5E-2	1.2E+1	1.1E+0	1.0E-1	4.9E-2
LOW				2.3E-2	1.1E-2	1.6E-3	6.6E-3	8.2E-2	3.4E-2	1.8E-2	1.5E-2

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J CALCIUM	EMISSIONS G/KG FUEL 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	27.8	1.5E-2	5.0E-2	0.0	0.0	6.4E-2	2.8E-2	4.5E-4	1.8E-3
E 16	8.3	2760	40.8	3.8E-2	1.1E-2	1.0E-3	0.0	5.1E-2	8.5E-3	1.4E-3	1.2E-3
E 17	8.2	2770	32.4	1.9E-2	1.7E-2	2.8E-4	0.0	3.6E-2	1.0E-2	5.3E-4	4.2E-4
F 22	6.0	2980	53.6	6.2E-2	4.8E-3	2.9E-3	0.0	6.9E-2	7.5E-3	3.3E-3	3.1E-3
F 30	6.8	2890	29.9	9.5E-2	4.5E-3	5.8E-4	0.0	1.0E-1	6.1E-3	1.3E-3	1.0E-3
G 15	8.7	3230	27.4	3.8E-2	5.6E-2	3.5E-4	0.0	9.4E-2	3.2E-2	1.0E-3	7.2E-4
G 20	9.2	2320	21.9	5.2E-2	4.9E-3	6.4E-3	0.0	6.3E-2	1.1E-2	6.7E-3	6.6E-3
H 11	9.4	1980	27.1	1.6E-2	1.9E-3	3.4E-3	0.0	2.1E-2	4.9E-3	3.5E-3	3.7E-3
I 09	5.9	2700	46.2	5.2E-2	7.5E-3	7.1E-2	0.0	1.3E-1	7.6E-2	7.1E-2	7.1E-2
I 18	7.8	1670	35.8	6.7E-2	3.5E-3	2.8E-2	7.1E-3	1.1E-1	3.9E-2	3.6E-2	3.6E-2
J 15	7.9	1550	25.2	8.5E-3	1.9E-3	3.8E-3	0.0	1.4E-2	1.4E-2	3.8E-3	3.9E-3
J 16	8.9	2570	38.8	7.9E-3	1.7E-3	4.6E-3	5.7E-3	2.0E-2	2.8E-2	1.0E-2	1.0E-2
K 18	9.8	1280	51.0	3.0E-2	0.0	4.1E-3	2.3E-3	3.6E-2	7.3E-3	6.6E-3	6.8E-3
AVERAGES											
SPREADER, NO REINJ FROM D.C.				5.0E-2	1.6E-2	1.9E-3	0.0	6.9E-2	1.2E-2	2.4E-3	2.2E-3
MASS FIRED OVERFEED				2.8E-2	9.4E-3	1.6E-2	2.2E-3	5.6E-2	2.7E-2	1.9E-2	1.9E-2
HIGH				9.5E-2	5.6E-2	7.1E-2	7.1E-3	1.3E-1	7.6E-2	7.1E-2	7.1E-2
LOW				7.9E-3	1.7E-3	2.8E-4	2.3E-3	1.4E-2	4.9E-3	4.5E-4	4.2E-4

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

SCANDIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL -					*- - STACK GAS CLEAN-UP - -*		
			10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	1.5E-3	4.9E-4	2.5E-6	1.1E-5	2.0E-3	5.2E-4	2.8E-5	1.7E-5
B 31	6.0	2670	1.5E-3	4.3E-4	2.6E-6	1.1E-5	2.0E-3	4.8E-4	2.8E-5	1.7E-5
B 33	6.1	2130	1.5E-3	7.4E-4	2.6E-6	1.2E-5	2.2E-3	7.0E-4	3.0E-5	1.8E-5
C 44	8.9	4380	1.5E-3	2.2E-5	5.3E-7	3.3E-6	1.5E-3	1.5E-4	1.5E-5	6.2E-6
C 45	8.3	4360	2.8E-3	1.9E-5	5.3E-7	3.3E-6	2.8E-3	2.7E-4	2.4E-5	8.1E-6
C 46	9.0	3230	1.8E-3	1.2E-4	4.0E-7	5.0E-6	2.0E-3	2.5E-4	1.9E-5	8.3E-6
AVERAGE			1.8E-3	3.0E-4	1.5E-6	7.8E-6	2.1E-3	3.9E-4	2.4E-5	1.2E-5
HIGH			2.8E-3	7.4E-4	2.6E-6	1.2E-5	2.8E-3	7.0E-4	3.0E-5	1.8E-5
LOW			1.5E-3	1.9E-5	4.0E-7	3.3E-6	1.5E-3	1.5E-4	1.5E-5	6.2E-6

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL -					*- - STACK GAS CLEAN-UP - -*		
			18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	8.6E-5	3.1E-5	0.0	0.0	1.2E-4	2.0E-5	8.1E-7	1.7E-6
E 16	8.3	2760	3.8E-4	1.4E-4	1.7E-6	0.0	5.2E-4	8.9E-5	5.4E-6	3.8E-6
E 17	6.2	2770	1.9E-4	3.7E-4	1.2E-6	0.0	5.6E-4	2.1E-4	5.1E-6	3.4E-6
F 22	6.0	2980	1.4E-3	4.8E-5	5.7E-6	0.0	1.4E-3	7.6E-5	1.6E-5	1.1E-5
F 30	6.8	2890	9.5E-4	4.5E-5	5.8E-6	0.0	1.0E-3	6.1E-5	1.3E-5	1.0E-5
G 15	8.7	3230	2.5E-4	4.4E-5	5.8E-6	0.0	3.0E-4	3.8E-5	7.9E-6	7.0E-6
G 20	9.2	2320	6.9E-4	2.0E-5	1.3E-5	0.0	7.2E-4	4.6E-5	1.8E-5	1.6E-5
H 11	9.4	1980	1.6E-4	1.5E-5	8.5E-6	0.0	1.8E-4	2.2E-5	1.0E-5	1.1E-5
I 09	5.9	2700	3.1E-4	3.0E-5	2.8E-4	0.0	6.3E-4	3.1E-4	2.8E-4	2.9E-4
I 18	7.8	1670	4.0E-4	1.2E-5	5.7E-5	4.3E-5	5.1E-4	1.2E-4	1.0E-4	1.1E-4
J 15	7.9	1550	5.7E-5	2.5E-5	4.7E-5	3.6E-5	1.6E-4	1.6E-4	8.3E-5	8.4E-5
J 16	8.9	2570	2.6E-5	5.6E-5	9.1E-5	5.7E-5	2.3E-4	2.3E-4	1.5E-4	1.5E-4
K 18	9.8	1280	2.0E-4	0.0	4.5E-5	2.3E-4	4.7E-4	2.8E-4	2.8E-4	2.8E-4
AVERAGES										
SPREADER, NO REINJ FROM D.C.			6.4E-4	1.1E-4	5.5E-6	0.0	7.5E-4	8.7E-5	1.1E-5	8.5E-6
MASS FIRED OVERFEED			1.8E-4	2.4E-5	7.6E-5	5.2E-5	3.3E-4	1.6E-4	1.3E-4	1.3E-4
HIGH			1.4E-3	3.7E-4	2.8E-4	2.3E-4	1.4E-3	3.1E-4	2.8E-4	2.9E-4
LOW			2.6E-5	1.2E-5	1.2E-6	3.6E-5	1.2E-4	2.0E-5	8.4E-7	1.7E-6

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

TITANIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J TITANIUM	EMISSIONS G/KG FUEL 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210	13.5					4.4E-3			
A 35	6.0	3140	13.2					6.5E-6			
B 30	6.0	2710	28.6	1.5E-1	4.7E-2	1.3E-4	1.1E-4	2.0E-1	4.9E-2	1.6E-3	5.4E-4
B 31	6.0	2670	24.7	2.3E-1	1.8E-2	1.9E-4	1.1E-4	2.5E-1	3.4E-2	2.0E-3	6.8E-4
B 33	6.1	2130	21.1	2.2E-1	3.3E-2	3.9E-4	1.2E-4	2.5E-1	4.4E-2	2.3E-3	8.9E-4
C 44	8.9	4380	23.1	5.3E-1	2.1E-2	1.3E-4	1.3E-4	5.5E-1	6.3E-2	4.1E-3	1.1E-3
C 45	8.3	4360	25.9	4.9E-1	1.9E-2	7.9E-5	6.8E-4	5.1E-1	5.8E-2	4.3E-3	1.4E-3
C 46	9.0	3230	20.0	6.4E-1	2.2E-2	1.2E-4	3.8E-4	6.6E-1	7.3E-2	5.1E-3	1.4E-3
AVERAGE				2.8E-1	2.0E-2	1.3E-4	1.7E-4	3.0E-1	4.1E-2	3.0E-3	1.3E-3
HIGH				6.4E-1	4.7E-2	3.9E-4	6.8E-4	6.6E-1	7.3E-2	5.1E-3	4.4E-3
LOW				1.5E-1	1.8E-2	7.9E-5	1.1E-4	6.5E-6	6.5E-6	6.5E-6	6.5E-6

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J TITANIUM	EMISSIONS G/KG FUEL 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	19.2	7.3E-2	1.5E-2	0.0	0.0	8.9E-2	1.1E-2	6.2E-4	1.3E-3
E 16	8.3	2760	26.9	1.9E-1	4.6E-2	6.9E-5	0.0	2.4E-1	3.1E-2	1.7E-3	1.0E-3
E 17	6.2	2770	61.5	7.4E-2	1.8E-2	1.2E-5	0.0	9.3E-2	1.3E-2	6.6E-4	3.8E-4
F 22	6.0	2960	21.9	2.1E-1	7.2E-3	2.9E-4	0.0	2.1E-1	1.1E-2	1.8E-3	1.1E-3
F 30	6.8	2890	25.3	4.3E-1	6.8E-3	5.8E-5	0.0	4.3E-1	1.7E-2	3.1E-3	1.8E-3
G 15	8.7	3230	30.6	2.5E-1	5.6E-2	1.2E-4	0.0	3.1E-1	3.9E-2	2.3E-3	1.3E-3
G 20	9.2	2320	26.2	5.2E-1	2.9E-2	6.4E-4	0.0	5.5E-1	3.3E-2	4.4E-3	2.6E-3
H 11	3.4	1980	13.3	7.3E-2	3.4E-3	3.4E-4	0.0	7.6E-2	4.5E-3	8.7E-4	1.5E-3
I 09	5.9	2730	19.8	1.6E-2	1.5E-2	1.4E-2	0.0	4.5E-2	2.3E-2	1.4E-2	1.5E-2
I 10	7.8	1670	15.9	2.0E-1	9.4E-3	1.7E-3	1.4E-6	2.1E-1	1.3E-2	3.2E-3	4.8E-3
J 15	7.9	1550	14.0	2.8E-2	1.2E-2	1.4E-3	0.0	4.2E-2	4.2E-2	1.7E-3	2.0E-3
J 16	8.9	2570	19.9	1.3E-2	5.6E-3	2.3E-3	0.0	2.1E-2	2.1E-2	2.4E-3	2.6E-3
K 18	3.8	1280	8.7	2.0E-2	0.0	9.1E-4	5.7E-4	2.1E-2	2.1E-3	1.6E-3	1.8E-3
AVERAGES SPREADER,NO REINJ FROM D.C.				2.8E-1	2.7E-2	2.0E-4	0.0	3.0E-1	2.4E-2	2.3E-3	1.4E-3
MASS FIRED OVERFEED				6.0E-2	8.7E-3	3.0E-3	8.2E-5	7.2E-2	1.7E-2	3.5E-3	4.1E-3
HIGH				5.2E-1	5.6E-2	1.4E-2	5.7E-4	5.5E-1	4.2E-2	1.4E-2	1.5E-2
LOW				1.3E-2	3.4E-3	1.2E-5	1.4E-6	2.1E-2	2.1E-3	6.2E-4	3.8E-4

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

VANADIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS - G/KG FUEL: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210					8.6E-5			
A 35	6.0	3140	2.3E-3	1.8E-3	1.3E-4	1.1E-5	4.9E-5			
B 30	6.0	2710	1.5E-2	1.9E-3	1.9E-4	1.1E-5	4.2E-3	1.7E-3	1.7E-4	1.4E-4
B 31	6.0	2670	2.9E-3	1.8E-3	2.6E-4	1.2E-5	1.7E-2	3.0E-3	3.2E-4	2.3E-4
B 33	6.1	2130	1.5E-2	3.4E-4	2.1E-5	0.0	5.0E-3	1.9E-3	3.1E-4	2.8E-4
C 44	8.9	4380	1.4E-2	4.3E-4	5.3E-6	0.0	1.6E-2	1.6E-3	1.3E-4	4.4E-5
C 45	8.3	4360	1.8E-2	8.8E-4	1.2E-4	0.0	1.5E-2	1.6E-3	1.1E-4	2.7E-5
C 46	9.0	3230					1.9E-2	2.4E-3	2.5E-4	1.5E-4
AVERAGE			8.5E-3	8.9E-4	9.3E-5	4.4E-6	1.0E-2	1.5E-3	1.8E-4	1.3E-4
HIGH			1.8E-2	1.9E-3	2.6E-4	1.2E-5	1.9E-2	3.0E-3	3.2E-4	2.8E-4
LOW			2.3E-3	3.4E-4	5.3E-6	1.1E-5	4.9E-5	4.9E-5	4.9E-5	2.7E-5

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS - G/KG FUEL: 10.5 µM 5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	1.2E-3	1.6E-3	0.0	0.0	2.9E-3	9.4E-4	2.8E-5	4.3E-5
E 16	8.3	2760	5.7E-3	1.4E-3	3.5E-5	0.0	7.1E-3	1.0E-3	8.4E-5	6.3E-5
E 17	4.2	2770	1.9E-3	1.1E-3	3.2E-6	0.0	3.0E-3	6.7E-4	2.4E-5	1.5E-5
F 22	6.0	2980	6.8E-3	7.2E-4	1.4E-4	0.0	7.7E-3	7.6E-4	2.8E-4	1.7E-4
F 30	6.8	2890	1.4E-2	6.8E-4	4.0E-5	0.0	1.5E-2	8.7E-4	1.4E-4	1.0E-4
G 15	8.7	3230	3.8E-3	8.9E-4	5.8E-5	0.0	4.7E-3	6.7E-4	9.1E-5	7.7E-5
G 20	9.2	2320	8.6E-3	7.8E-4	1.9E-4	0.0	1.0E-2	9.0E-4	2.6E-4	2.3E-4
H 11	9.4	1980	4.8E-3	3.7E-4	3.8E-5	0.0	5.3E-3	4.0E-4	7.5E-5	1.2E-4
I 09	5.9	2700	4.2E-3	2.2E-3	1.4E-3	0.0	7.8E-3	2.8E-3	1.5E-3	1.5E-3
I 18	7.8	1670	2.0E-3	4.7E-4	5.7E-4	7.1E-7	3.0E-3	8.9E-4	5.8E-4	6.8E-4
J 15	7.9	1550	5.7E-4	1.2E-3	4.7E-4	4.7E-5	2.3E-3	2.3E-3	5.3E-4	5.5E-4
J 16	8.9	2570	2.6E-4	1.1E-3	2.3E-4	0.0	1.6E-3	1.6E-3	2.4E-4	2.5E-4
K 18	9.8	1280	4.9E-4	0.0	1.4E-5	1.7E-5	5.2E-4	4.7E-5	3.4E-5	3.8E-5
AVERAGES										
SPREADER, NO REINJ FROM D.C.			6.8E-3	9.2E-4	7.8E-5	0.0	7.8E-3	8.1E-4	1.3E-4	1.1E-4
MASS FIRED OVERFEED			1.9E-3	1.0E-3	3.9E-4	9.3E-6	3.3E-3	1.3E-3	4.2E-4	4.4E-4
HIGH			1.4E-2	2.2E-3	1.4E-3	4.7E-5	1.5E-2	2.8E-3	1.5E-3	1.5E-3
LOW			2.6E-4	3.7E-4	3.2E-6	7.1E-7	5.2E-4	4.7E-5	2.8E-5	1.5E-5

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

CHROMIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS - G/KG FUEL: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210					8.0E-4			
A 35	6.0	3140					1.2E-4			
B 30	6.0	2710	7.7E-4	9.5E-4	3.1E-2	5.6E-6	3.3E-2	3.2E-2	3.1E-2	3.1E-2
B 31	6.0	2670	1.5E-3	7.8E-4	3.2E-2	5.7E-4	3.5E-2	3.3E-2	3.2E-2	3.2E-2
B 33	6.1	2130	2.2E-3	8.3E-4	6.5E-2	6.2E-4	6.9E-2	6.6E-2	6.6E-2	6.6E-2
C 44	6.9	4380	7.6E-3	5.4E-4	5.3E-3	3.0E-3	1.6E-2	9.3E-3	8.3E-3	8.3E-3
C 45	6.3	4360	7.1E-3	5.7E-4	2.6E-3	2.3E-3	1.3E-2	6.0E-3	5.0E-3	5.0E-3
C 46	7.0	3230	9.1E-3	1.0E-3	2.8E-2	1.0E-2	4.7E-2	3.9E-2	3.7E-2	3.7E-2
AVERAGE			3.5E-3	5.8E-4	2.0E-2	2.0E-3	2.7E-2	2.3E-2	2.3E-2	2.3E-2
HIGH			9.1E-3	1.0E-3	6.5E-2	1.0E-2	6.9E-2	6.6E-2	6.6E-2	6.6E-2
LOW			7.7E-4	5.4E-4	2.6E-3	5.6E-6	1.2E-4	1.2E-4	1.2E-4	1.2E-4

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS - G/KG FUEL: 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	1.2E-2	4.0E-3	0.0	0.0	1.6E-2	2.6E-3	1.1E-4	2.4E-4
E 16	6.3	2760	1.1E-3	9.1E-3	3.5E-2	0.0	4.5E-2	4.0E-2	3.5E-2	3.5E-2
E 17	6.2	2770	5.6E-5	1.8E-3	1.6E-3	0.0	3.5E-3	2.6E-3	1.6E-3	1.6E-3
F 22	6.0	2980	2.1E-3	7.2E-4	7.1E-2	0.0	7.4E-2	7.2E-2	7.1E-2	7.1E-2
F 30	6.8	2890	2.8E-3	2.3E-3	1.7E-2	0.0	2.2E-2	1.9E-2	1.7E-2	1.7E-2
G 15	8.7	3230	2.5E-3	8.9E-4	5.8E-2	0.0	6.2E-2	5.9E-2	5.8E-2	5.8E-2
G 20	9.2	2320	8.6E-3	7.8E-4	3.8E-2	0.0	4.7E-2	3.9E-2	3.8E-2	3.8E-2
H 11	9.4	1980	8.1E-4	2.2E-4	8.5E-3	0.0	9.5E-3	8.6E-3	8.5E-3	8.5E-3
I 09	5.9	2700	2.6E-3	6.0E-4	4.7E-1	0.0	4.7E-1	4.7E-1	4.7E-1	4.7E-1
I 18	7.8	1670	2.0E-3	7.1E-4	1.1E-1	5.7E-3	1.2E-1	1.2E-1	1.2E-1	1.2E-1
J 15	7.9	1550	2.3E-4	4.9E-4	7.1E-2	4.7E-3	7.6E-2	7.6E-2	7.5E-2	7.5E-2
J 16	8.9	2570	2.6E-4	4.5E-4	1.6E-1	4.6E-3	1.6E-1	1.6E-1	1.6E-1	1.6E-1
K 18	9.8	1280	3.0E-4	0.0	4.5E-3	1.1E-2	1.6E-2	1.6E-2	1.6E-2	1.6E-2
AVERAGES										
SPREADER, NO REINJ FROM D.C.			2.9E-3	2.6E-3	3.7E-2	0.0	4.2E-2	3.8E-2	3.7E-2	3.7E-2
MASS FIRED OVERFEED			2.6E-3	9.3E-4	1.2E-1	3.8E-3	1.3E-1	1.2E-1	1.2E-1	1.2E-1
HIGH			1.2E-2	9.1E-3	4.7E-1	1.1E-2	4.7E-1	4.7E-1	4.7E-1	4.7E-1
LOW			5.6E-5	2.2E-4	1.6E-3	4.6E-3	3.5E-3	2.6E-3	1.1E-4	2.4E-4

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

MANGANESE

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J MANGANESE	EMISSIONS G/KG FUEL: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210	0.0					4.4E-4			
A 35	6.0	3140	0.0					2.2E-4			
B 30	6.0	2710	0.0	7.7E-4	4.2E-4	3.8E-3	1.1E-4	5.1E-3	4.3E-3	3.9E-3	3.9E-3
B 31	6.0	2670	0.0	2.3E-3	1.5E-4	3.8E-3	1.1E-4	6.4E-3	4.3E-3	4.0E-3	3.9E-3
B 33	6.1	2130	0.0	3.6E-3	2.7E-4	6.5E-3	3.7E-4	1.1E-2	7.4E-3	6.9E-3	6.9E-3
C 44	8.9	4380	0.0	7.6E-2	4.9E-3	2.6E-4	0.0	8.1E-2	1.1E-2	6.3E-4	3.8E-4
C 45	8.3	4360	0.0	7.1E-2	3.2E-3	1.6E-4	0.0	7.4E-2	8.8E-3	6.7E-4	2.7E-4
C 46	8.0	3230	0.0	9.1E-2	8.2E-4	1.2E-2	0.0	1.0E-1	2.1E-2	1.3E-2	1.2E-2
AVERAGE				3.1E-2	1.2E-3	3.3E-3	7.5E-5	3.5E-2	7.1E-3	3.7E-3	3.5E-3
HIGH				9.1E-2	4.9E-3	1.2E-2	3.7E-4	1.0E-1	2.1E-2	1.3E-2	1.2E-2
LOW				7.7E-4	1.5E-4	1.6E-4	1.1E-4	2.2E-4	2.2E-4	2.2E-4	2.2E-4

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J MANGANESE	EMISSIONS G/KG FUEL: 10.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	0.1	3.7E-3	4.7E-4	0.0	0.0	4.1E-3	3.8E-4	2.9E-5	6.2E-5
E 16	8.3	2760	0.2	1.9E-4	6.9E-5	1.0E-3	0.0	1.3E-3	1.1E-3	1.0E-3	1.0E-3
E 17	8.2	2770	0.2	5.6E-4	1.8E-4	1.6E-4	0.0	9.1E-4	2.8E-4	1.7E-4	1.7E-4
F 22	6.0	2980	0.4	6.8E-4	1.4E-4	3.6E-3	0.0	4.4E-3	3.7E-3	3.6E-3	3.6E-3
F 30	6.8	2890	0.2	1.4E-3	1.4E-4	5.8E-4	0.0	2.1E-3	7.8E-4	5.9E-4	5.8E-4
G 15	8.7	3230	0.5	2.5E-3	3.3E-4	4.1E-3	0.0	6.9E-3	4.4E-3	4.1E-3	4.1E-3
G 20	9.2	2320	0.2	1.5E-3	2.9E-4	3.8E-3	0.0	5.7E-3	4.0E-3	3.8E-3	3.8E-3
H 11	9.4	1980	1.7	4.8E-3	1.1E-4	8.5E-4	0.0	5.8E-3	1.1E-3	8.8E-4	9.2E-4
I 09	5.9	2700	1.0	2.6E-3	6.0E-4	4.7E-2	0.0	5.0E-2	4.7E-2	4.7E-2	4.7E-2
I 16	7.8	1670	0.2	1.3E-3	4.7E-4	5.7E-2	6.4E-6	5.8E-2	5.7E-2	5.7E-2	5.7E-2
J 15	7.9	1550	0.2	1.4E-4	1.9E-4	9.4E-3	0.0	1.0E-2	1.0E-2	9.4E-3	9.4E-3
J 16	8.9	2570	0.9	1.1E-4	2.8E-4	2.3E-2	1.7E-6	2.3E-2	2.3E-2	2.3E-2	2.3E-2
K 18	9.8	1280	0.0	3.0E-4	0.0	1.4E-3	2.3E-5	1.7E-3	1.4E-3	1.4E-3	1.4E-3
AVERAGES											
SPREADER, NO REINJ FROM D.C.				1.2E-3	1.9E-4	2.2E-3	0.0	3.6E-3	2.4E-3	2.2E-3	2.2E-3
MASS FIRED OVERFEED				1.9E-3	3.0E-4	2.0E-2	4.4E-6	2.2E-2	2.0E-2	2.0E-2	2.0E-2
HIGH				4.8E-3	6.0E-4	5.7E-2	2.3E-5	5.8E-2	5.7E-2	5.7E-2	5.7E-2
LOW				1.1E-4	6.9E-5	1.6E-4	1.7E-6	9.1E-4	2.8E-4	2.9E-5	6.2E-5

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

IRON

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	IRON	*- - - E M I S S I O N S - G/KG FUEL * 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210	156.4					6.6E-3			
A 35	6.0	3140	152.9					7.1E-3			
B 30	6.0	2710	120.3	3.1E-1	1.4E-1	6.3E-2	1.1E-1	6.3E-1	3.1E-1	1.0E-1	1.7E-1
B 31	6.0	2670	120.4	3.1E-1	1.6E-1	6.4E-2	5.7E-3	5.4E-1	2.2E-1	7.3E-2	7.0E-2
B 33	6.1	2130	98.4	7.3E-1	2.8E-1	3.2E-1	3.7E-2	1.4E+0	6.3E-1	3.7E-1	3.6E-1
C 44	3.9	4380	137.7	3.8E+0	2.1E-2	1.6E-2	0.0	3.8E+0	3.7E-1	4.3E-2	2.2E-2
C 45	8.3	4360	156.6	3.5E+0	1.9E-2	2.6E-2	0.0	3.6E+0	3.5E-1	5.1E-2	3.2E-2
C 46	9.0	3230	561.7	9.1E+0	7.5E-2	6.0E-2	1.0E-2	9.3E+0	9.3E-1	1.3E-1	8.3E-2
AVERAGE				2.2E+0	8.7E-2	6.9E-2	2.1E-2	2.4E+0	3.5E-1	1.1E-1	9.5E-2
HIGH				9.1E+0	2.8E-1	3.2E-1	1.1E-1	9.3E+0	9.3E-1	3.7E-1	3.6E-1
LOW				3.1E-1	1.9E-2	1.6E-2	5.7E-3	6.6E-3	6.6E-3	6.6E-3	6.6E-3

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SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	IRON	*- - - E M I S S I O N S - G/KG FUEL * 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	146.7	1.8E-1	8.2E-2	0.0	0.0	2.7E-1	5.1E-2	1.9E-3	4.0E-3
E 16	8.3	2760	100.0	1.3E-1	1.6E-2	8.6E-2	0.0	2.4E-1	1.0E-1	8.7E-2	8.7E-2
E 17	6.2	2770	120.4	1.9E-1	1.3E-1	1.6E-2	0.0	3.3E-1	9.3E-2	1.8E-2	1.7E-2
F 22	6.0	2980	337.8	1.4E+0	4.8E-2	3.6E-1	0.0	1.8E+0	4.3E-1	3.7E-1	3.6E-1
F 30	6.8	2890	215.7	4.7E-1	4.5E-2	1.4E-1	0.0	6.6E-1	1.8E-1	1.5E-1	1.5E-1
G 15	8.7	3230	154.4	5.0E-1	8.9E-2	1.5E-1	0.0	7.4E-1	2.1E-1	1.5E-1	1.5E-1
G 20	9.2	2320	73.4	5.2E-1	2.9E-2	1.0E-1	0.0	6.4E-1	1.3E-1	1.0E-1	1.0E-1
H 11	9.4	1980	391.4	2.4E-1	2.2E-2	3.8E-2	0.0	3.0E-1	5.8E-2	4.0E-2	4.2E-2
I 09	5.9	2730	514.4	1.3E+0	1.1E-1	1.9E+0	0.0	3.3E+0	2.0E+0	1.9E+0	1.9E+0
I 18	7.8	1670	220.8	1.7E+0	1.2E-1	6.8E-1	1.4E-4	2.5E+0	8.0E-1	6.9E-1	7.1E-1
J 15	7.9	1550	192.4	7.1E-2	1.5E-1	7.1E-1	3.0E-2	1.0E+0	1.0E+0	7.4E-1	7.4E-1
J 16	8.9	2570	397.0	5.3E-2	1.1E-1	9.1E-1	2.9E-2	1.1E+0	1.1E+0	9.4E-1	9.4E-1
K 18	9.8	1280	189.1	1.0E-1	0.0	2.7E-2	3.4E-2	1.6E-1	6.5E-2	6.2E-2	6.3E-2
AVERAGES											
SPREADER,NO REINJ FROM D.C.				5.3E-1	5.9E-2	1.4E-1	0.0	7.3E-1	1.9E-1	1.4E-1	1.4E-1
MASS FIRED OVERFEED				5.2E-1	8.6E-2	6.1E-1	1.3E-2	1.2E+0	7.2E-1	6.2E-1	6.3E-1
HIGH				1.7E+0	1.5E-1	1.9E+0	3.4E-2	3.3E+0	2.0E+0	1.9E+0	1.9E+0
LOW				5.3E-2	1.6E-2	1.6E-2	1.4E-4	1.6E-1	5.1E-2	1.9E-3	4.0E-3

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

COBALT

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS - G/KG FUEL: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210					8.5E-5			
A 35	6.0	3140					4.1E-5			
B 30	6.0	2710	2.3E-4	4.9E-4	1.3E-3	1.1E-4	2.1E-3	1.8E-3	1.4E-3	1.4E-3
B 31	6.0	2670	7.7E-4	4.7E-4	1.3E-3	4.6E-5	2.6E-3	1.7E-3	1.3E-3	1.3E-3
B 33	6.1	2130	7.3E-4	8.6E-4	2.6E-3	5.0E-5	4.2E-3	3.4E-3	2.7E-3	2.7E-3
C 44	8.9	4380	7.6E-4	6.3E-5	7.9E-5	2.0E-4	1.1E-3	3.9E-4	2.8E-4	2.8E-4
C 45	8.3	4360	7.1E-4	5.0E-5	5.3E-5	0.0	8.1E-4	1.5E-4	5.8E-5	5.4E-5
C 46	9.0	3230	2.7E-3	3.8E-4	1.2E-3	4.0E-4	4.7E-3	2.1E-3	1.6E-3	1.6E-3
AVERAGE			7.4E-4	2.9E-4	8.1E-4	1.0E-4	2.0E-3	1.2E-3	9.3E-4	9.2E-4
HIGH			2.7E-3	8.6E-4	2.6E-3	4.0E-4	4.7E-3	3.4E-3	2.7E-3	2.7E-3
LOW			2.3E-4	5.0E-5	5.3E-5	4.6E-5	4.1E-5	4.1E-5	4.1E-5	4.1E-5

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS - G/KG FUEL: 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	1.2E-4	1.0E-3	0.0	0.0	1.2E-3	5.7E-4	8.1E-6	1.7E-5
E 16	8.3	2760	1.1E-3	1.4E-3	1.4E-3	0.0	3.9E-3	2.2E-3	1.4E-3	1.4E-3
E 17	6.2	2770	5.6E-4	1.1E-3	2.8E-5	0.0	1.7E-3	6.6E-4	4.0E-5	3.5E-5
F 22	6.0	2980	2.1E-3	1.4E-4	2.9E-3	0.0	5.1E-3	3.0E-3	2.9E-3	2.9E-3
F 33	6.8	2890	2.8E-3	2.3E-4	5.8E-4	0.0	3.6E-3	7.9E-4	6.8E-4	5.9E-4
G 15	8.7	3230	1.1E-3	5.6E-4	2.9E-4	0.0	2.0E-3	6.3E-4	3.0E-4	3.0E-4
G 24	9.2	2320	1.4E-3	4.9E-4	1.9E-4	0.0	2.1E-3	5.0E-4	2.0E-4	2.0E-4
H 11	9.4	1980	7.3E-4	3.7E-4	3.4E-4	0.0	1.4E-3	5.7E-4	3.5E-4	3.6E-4
I 09	5.9	2700	4.2E-4	2.2E-4	1.4E-2	0.0	1.5E-2	1.4E-2	1.4E-2	1.4E-2
I 18	7.8	1670	5.3E-4	4.7E-4	5.7E-3	3.6E-4	7.0E-3	6.3E-3	6.0E-3	6.0E-3
J 15	7.9	1550	8.5E-5	4.9E-4	2.8E-3	0.0	3.4E-3	3.4E-3	2.8E-3	2.8E-3
J 16	8.9	2570	2.6E-5	2.8E-4	4.1E-3	2.9E-4	4.7E-3	4.7E-3	4.4E-3	4.4E-3
K 18	9.8	1280	2.0E-4	0.0	9.1E-5	1.1E-5	3.0E-4	1.1E-4	1.0E-4	1.1E-4
AVERAGES			1.5E-3	6.5E-4	6.9E-4	0.0	3.1E-3	1.3E-3	9.0E-4	9.0E-4
SPREADER, NO REINJ FROM D.C.			3.0E-4	4.1E-4	3.9E-3	9.4E-5	4.7E-3	4.3E-3	4.0E-3	4.0E-3
MASS FIRED OVERFEED			2.8E-3	1.4E-3	1.4E-2	3.6E-4	1.5E-2	1.4E-2	1.4E-2	1.4E-2
HIGH			2.6E-5	1.4E-4	2.8E-5	1.1E-5	3.0E-4	1.1E-4	8.1E-6	1.7E-5
LOW										

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

NICKEL

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210					8.0E-4			
A 35	6.0	3140					2.5E-4			
B 30	6.0	2710	7.7E-4	1.2E-3	1.3E-1	5.6E-3	1.3E-1	1.3E-1	1.3E-1	1.3E-1
B 31	6.0	2670	7.7E-4	7.9E-4	1.3E-1	3.4E-3	1.3E-1	1.3E-1	1.3E-1	1.3E-1
B 33	6.1	2130	7.3E-4	1.2E-3	1.9E-1	3.7E-3	2.0E-1	2.0E-1	2.0E-1	2.0E-1
C 44	8.9	4380	7.6E-3	2.2E-4	1.1E-2	1.3E-2	3.2E-2	2.5E-2	2.4E-2	2.4E-2
C 45	8.3	4360	4.2E-3	2.5E-4	2.4E-3	0.0	6.9E-3	2.9E-3	2.4E-3	2.4E-3
C 46	9.0	3230	1.5E-2	4.4E-4	2.0E-2	4.0E-2	7.5E-2	6.2E-2	6.0E-2	6.0E-2
AVERAGE			3.6E-3	5.1E-4	6.0E-2	8.3E-3	7.3E-2	6.9E-2	6.9E-2	6.8E-2
HIGH			1.5E-2	1.2E-3	1.9E-1	4.0E-2	2.0E-1	2.0E-1	2.0E-1	2.0E-1
LOW			7.3E-4	2.2E-4	2.4E-3	3.4E-3	2.5E-4	2.5E-4	2.5E-4	2.5E-4

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	3.7E-3	2.1E-3	0.0	0.0	5.8E-3	1.3E-3	4.0E-5	8.7E-5
E 16	8.3	2760	1.1E-3	2.3E-3	3.5E-3	0.0	6.9E-3	4.7E-3	3.5E-3	3.5E-3
E 17	6.2	2770	1.1E-3	1.8E-3	2.8E-3	0.0	5.8E-3	3.9E-3	2.9E-3	2.9E-3
F 22	6.0	2980	2.1E-3	2.4E-4	5.7E-2	0.0	5.9E-2	5.7E-2	5.7E-2	5.7E-2
F 30	6.6	2890	1.4E-3	1.4E-3	1.7E-2	0.0	2.0E-2	1.8E-2	1.7E-2	1.7E-2
G 15	8.7	3230	2.5E-3	8.9E-4	1.2E-2	0.0	1.5E-2	1.2E-2	1.2E-2	1.2E-2
G 28	9.2	2320	3.4E-3	2.9E-3	2.5E-2	0.0	3.2E-2	2.7E-2	2.5E-2	2.5E-2
H 11	9.4	1980	8.1E-4	2.2E-3	1.7E-2	0.0	2.0E-2	1.8E-2	1.7E-2	1.7E-2
I 09	5.9	2700	4.2E-3	1.5E-3	9.4E-3	0.0	1.5E-2	1.0E-2	9.4E-3	9.5E-3
I 10	7.8	1670	1.3E-3	1.2E-3	2.0E-1	5.7E-4	2.0E-1	2.0E-1	2.0E-1	2.0E-1
J 15	7.9	1550	5.7E-5	1.9E-3	1.4E-1	0.0	1.4E-1	1.4E-1	1.4E-1	1.4E-1
J 16	8.9	2570	4.0E-5	1.7E-3	2.0E-1	1.7E-4	2.1E-1	2.1E-1	2.0E-1	2.1E-1
K 18	9.8	1280	1.0E-3	0.0	9.1E-3	5.7E-3	1.6E-2	1.5E-2	1.5E-2	1.5E-2
AVERAGES										
SPREADER,NO REINJ FROM D.C.			1.9E-3	1.6E-3	2.0E-2	0.0	2.3E-2	2.1E-2	2.0E-2	2.0E-2
MASS FIRED OVERFEED			1.6E-3	1.5E-3	8.3E-2	9.2E-4	8.7E-2	8.5E-2	8.4E-2	8.4E-2
HIGH			4.2E-3	2.9E-3	2.0E-1	5.7E-3	2.1E-1	2.1E-1	2.0E-1	2.1E-1
LOW			4.0E-5	2.4E-4	2.8E-3	1.7E-4	5.8E-3	1.3E-3	4.0E-5	8.7E-5

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

COPPER

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS - G/KG FUEL: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210					3.4E-4			
A 35	6.0	3140					1.3E-4			
B 30	6.0	2710	7.7E-4	6.7E-3	3.8E-4	2.2E-3	1.0E-2	7.7E-3	2.7E-3	2.6E-3
B 31	6.0	2670	2.3E-3	4.3E-3	3.8E-4	3.4E-3	1.0E-2	7.2E-3	3.9E-3	3.8E-3
B 33	6.1	2130	2.2E-3	4.5E-3	1.3E-3	2.5E-3	1.0E-2	7.4E-3	3.8E-3	3.8E-3
C 44	3.9	4380	7.6E-3	1.1E-3	5.3E-4	4.6E-3	1.4E-2	6.7E-3	5.2E-3	5.2E-3
C 45	8.3	4360	1.4E-2	1.1E-3	5.3E-4	0.0	1.6E-2	2.6E-3	6.4E-4	5.5E-4
C 46	9.0	3230	2.7E-3	1.3E-3	4.0E-4	0.0	4.4E-3	1.6E-3	4.2E-4	4.0E-4
AVERAGE			3.7E-3	2.4E-3	4.4E-4	1.6E-3	8.2E-3	4.2E-3	2.1E-3	2.1E-3
HIGH			1.4E-2	6.7E-3	1.3E-3	4.6E-3	1.6E-2	7.7E-3	5.2E-3	5.2E-3
LOW			7.7E-4	1.1E-3	3.8E-4	2.2E-3	1.3E-4	1.3E-4	1.3E-4	1.3E-4

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS - G/KG FUEL: 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	4.9E-3	1.9E-2	0.0	0.0	2.4E-2	1.1E-2	1.7E-4	3.6E-4
E 16	8.3	2760	1.7E-4	2.3E-4	6.9E-5	0.0	4.7E-4	2.0E-4	7.2E-5	7.1E-5
E 17	6.2	2770	1.7E-3	1.1E-3	2.8E-5	0.0	2.8E-3	6.9E-4	4.8E-5	4.0E-5
F 22	6.0	2980	4.1E-4	7.2E-4	1.4E-4	0.0	1.3E-3	5.5E-4	1.5E-4	1.5E-4
F 30	6.8	2890	1.4E-3	6.8E-4	1.7E-5	0.0	2.1E-3	4.3E-4	3.2E-5	2.6E-5
G 15	8.7	3230	3.8E-3	3.3E-3	1.8E-4	0.0	7.3E-3	2.1E-3	2.3E-4	2.0E-4
G 20	9.2	2320	3.4E-3	2.0E-3	1.9E-4	0.0	5.6E-3	1.4E-3	2.3E-4	2.1E-4
H 11	9.4	1980	2.4E-3	1.5E-3	8.5E-4	0.0	4.8E-3	1.7E-3	8.7E-4	9.0E-4
I 09	5.9	2700	4.2E-3	6.0E-3	2.4E-3	0.0	1.2E-2	5.8E-3	2.4E-3	2.5E-3
I 18	7.8	1670	2.0E-3	7.1E-3	1.7E-3	3.6E-2	4.6E-2	4.1E-2	3.7E-2	3.7E-2
J 15	7.9	1550	2.8E-4	3.1E-3	2.8E-3	3.0E-2	3.6E-2	3.6E-2	3.3E-2	3.3E-2
J 16	8.9	2570	4.0E-5	2.8E-3	4.6E-3	2.9E-2	3.6E-2	3.6E-2	3.3E-2	3.3E-2
K 18	9.8	1280	1.0E-3	0.0	4.1E-4	3.4E-5	1.4E-3	4.7E-4	4.5E-4	4.6E-4
AVERAGES										
SPREADER,NO REINJ FROM D.C.			1.8E-3	1.3E-3	1.0E-4	0.0	3.3E-3	9.0E-4	1.3E-4	1.2E-4
MASS FIRED OVERFEED			2.1E-3	5.6E-3	1.8E-3	1.3E-2	2.3E-2	1.9E-2	1.5E-2	1.5E-2
HIGH			4.9E-3	1.9E-2	4.6E-3	3.6E-2	4.6E-2	4.1E-2	3.7E-2	3.7E-2
LOW			4.0E-5	2.3E-4	1.7E-5	3.4E-5	4.7E-4	2.0E-4	3.2E-5	2.6E-5

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

ZINC

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS - G/KG FUEL: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210					2.2E-4			
A 35	6.0	3140					4.2E-4			
B 30	6.0	2710	1.5E-4	1.1E-2	1.3E-3	4.5E-4	1.2E-2	1.0E-2	1.8E-3	1.7E-3
B 31	6.0	2670	7.7E-4	5.7E-3	6.4E-4	4.6E-4	7.6E-3	5.4E-3	1.1E-3	1.1E-3
B 33	6.1	2130	7.3E-4	6.0E-3	1.3E-3	2.5E-4	8.2E-3	6.1E-3	1.6E-3	1.6E-3
C 44	8.9	4380	2.3E-3	1.5E-3	2.6E-4	0.0	4.1E-3	1.6E-3	2.9E-4	2.7E-4
C 45	8.3	4360	2.1E-3	1.0E-3	2.6E-4	0.0	3.4E-3	1.2E-3	2.9E-4	2.7E-4
C 46	9.0	3230	2.7E-3	2.2E-3	7.9E-4	0.0	5.8E-3	2.7E-3	8.3E-4	8.8E-4
AVERAGE			1.1E-3	3.4E-3	5.6E-4	1.4E-4	5.3E-3	3.4E-3	8.2E-4	8.8E-4
HIGH			2.7E-3	1.1E-2	1.3E-3	4.6E-4	1.2E-2	1.0E-2	1.8E-3	1.7E-3
LOW			1.5E-4	1.0E-3	2.6E-4	2.5E-4	2.2E-4	2.2E-4	2.2E-4	2.2E-4

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS - G/KG FUEL: 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	7.3E-4	1.9E-2	0.0	0.0	1.9E-2	1.0E-2	1.4E-4	2.9E-4
E 16	8.3	2760	1.1E-4	4.6E-5	3.5E-5	0.0	2.0E-4	6.3E-5	3.6E-5	3.5E-5
E 17	6.2	2770	5.6E-4	3.7E-5	2.0E-6	0.0	6.0E-4	4.0E-5	6.2E-6	4.4E-6
F 22	6.0	2980	6.8E-5	1.4E-4	5.7E-5	0.0	2.7E-4	1.4E-4	5.9E-5	5.8E-5
F 30	6.8	2890	1.4E-4	6.8E-5	5.8E-5	0.0	2.7E-4	1.0E-4	5.9E-5	5.6E-5
G 15	8.7	3230	1.3E-3	3.3E-4	1.2E-4	0.0	1.7E-3	3.4E-4	1.3E-4	1.2E-4
G 20	9.2	2320	1.7E-3	2.9E-3	2.5E-4	0.0	4.9E-3	1.9E-3	2.9E-4	2.7E-4
H 11	9.4	1980	4.8E-3	1.1E-4	2.1E-4	0.0	5.2E-3	4.3E-4	2.5E-4	2.9E-4
I 09	5.9	2730	5.2E-3	2.2E-2	4.7E-3	0.0	3.2E-2	1.7E-2	4.9E-3	5.1E-3
I 18	7.8	1670	4.7E-4	4.7E-2	4.0E-4	7.1E-7	4.8E-2	2.6E-2	7.3E-4	1.1E-3
J 15	7.9	1550	2.0E-5	6.2E-3	2.8E-4	0.0	6.5E-3	6.5E-3	3.3E-4	3.8E-4
J 16	8.9	2570	4.0E-5	1.1E-2	4.1E-4	0.0	1.2E-2	1.2E-2	4.9E-4	5.8E-4
K 18	9.8	1280	2.0E-4	0.0	4.1E-4	2.3E-4	8.3E-4	6.4E-4	6.4E-4	6.4E-4
AVERAGES										
SPREADER, NO REINJ FROM D.C.			6.4E-4	5.9E-4	8.7E-5	0.0	1.3E-3	4.3E-4	1.0E-4	9.2E-5
MASS FIRED OVERFEED			1.6E-3	1.5E-2	9.2E-4	3.3E-5	1.8E-2	1.0E-2	1.1E-3	1.2E-3
HIGH			5.2E-3	4.7E-2	4.7E-3	2.3E-4	4.8E-2	2.6E-2	4.9E-3	5.1E-3
LOW			2.0E-5	3.7E-5	2.0E-6	7.1E-7	2.0E-4	4.0E-5	6.2E-6	4.4E-6

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

GALLIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS - G/KG FUEL: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	4.6E-4	6.9E-4	1.2E-5	5.6E-6	1.2E-3	5.7E-4	2.6E-5	2.0E-5
B 31	6.0	2670	3.1E-4	3.9E-4	1.3E-5	5.7E-6	7.1E-4	3.4E-4	2.4E-5	2.0E-5
B 33	6.1	2130	4.4E-4	3.1E-4	3.9E-5	6.2E-6	7.9E-4	3.2E-4	5.1E-5	4.7E-5
C 44	8.9	4380	1.5E-3	8.0E-4	2.1E-6	6.6E-6	2.3E-3	7.4E-4	2.5E-5	1.2E-5
C 45	8.3	4360	1.4E-3	7.6E-4	7.9E-7	6.7E-6	2.2E-3	7.0E-4	2.3E-5	1.1E-5
C 46	9.0	3230	9.1E-4	6.3E-4	4.0E-6	0.0	1.6E-3	5.6E-4	1.5E-5	6.3E-6
AVERAGE			8.4E-4	6.0E-4	1.2E-5	5.1E-6	1.5E-3	5.4E-4	2.7E-5	1.9E-5
HIGH			1.5E-3	8.0E-4	3.9E-5	6.7E-6	2.3E-3	7.4E-4	5.1E-5	4.7E-5
LOW			3.1E-4	3.1E-4	7.9E-7	5.6E-6	7.1E-4	3.2E-4	1.5E-5	6.3E-6

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS - G/KG FUEL: 18.5 µM 45.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	13.2	2070	1.2E-4	2.9E-3	0.0	0.0	3.1E-3	1.6E-3	2.1E-5	4.6E-5
E 16	8.3	2760	1.0E-4	6.9E-5	1.4E-6	0.0	1.7E-4	4.2E-5	2.5E-6	2.0E-6
E 17	6.2	2770	1.1E-4	1.7E-4	2.8E-7	0.0	2.8E-4	1.0E-4	2.2E-6	1.4E-6
F 22	6.0	2980	2.1E-4	2.2E-4	1.4E-5	0.0	4.4E-4	1.4E-4	1.7E-5	1.6E-5
F 33	6.8	2890	1.4E-4	2.0E-4	1.7E-6	0.0	3.5E-4	1.2E-4	4.1E-6	3.1E-6
G 15	8.7	3230	2.5E-4	2.2E-3	5.8E-6	0.0	2.5E-3	1.2E-3	2.3E-5	1.6E-5
G 20	9.2	2320	1.7E-4	1.0E-3	6.5E-6	0.0	1.2E-3	5.5E-4	1.5E-5	1.1E-5
H 11	9.4	1980	7.3E-4	3.4E-4	8.5E-6	0.0	1.1E-3	2.2E-4	1.6E-5	2.4E-5
I 09	5.9	2700	2.6E-3	7.5E-4	4.7E-4	0.0	3.8E-3	1.0E-3	4.9E-4	5.2E-4
I 18	7.8	1670	3.3E-4	1.2E-3	5.7E-5	5.7E-6	1.6E-3	7.2E-4	7.3E-5	8.5E-5
J 15	7.9	1550	8.5E-5	6.2E-4	2.8E-5	4.7E-6	7.4E-4	7.4E-4	3.8E-5	4.4E-5
J 16	8.9	2570	2.6E-5	1.1E-3	4.6E-5	5.7E-6	1.2E-3	1.2E-3	5.9E-5	6.8E-5
K 18	9.8	1280	1.0E-4	0.0	2.3E-5	5.7E-5	1.8E-4	8.3E-5	8.1E-5	8.1E-5
AVERAGES										
SPREADER, NO REINJ FROM D.C.			1.8E-4	6.4E-4	5.0E-6	0.0	8.1E-4	3.6E-4	1.1E-5	8.2E-6
MASS FIRED OVERFEED			5.7E-4	1.0E-3	9.0E-5	1.0E-5	1.7E-3	7.9E-4	1.1E-4	1.2E-4
HIGH			2.6E-3	2.9E-3	4.7E-4	5.7E-5	3.8E-3	1.6E-3	4.9E-4	5.2E-4
LOW			2.6E-5	6.9E-5	2.8E-7	4.7E-6	1.7E-4	4.2E-5	2.2E-6	1.4E-6

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

GERMANIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS - G/KG FUEL: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
B 38	6.0	2710	2.3E-5	1.6E-5	1.3E-4	2.2E-5	1.9E-4	1.6E-4	1.5E-4	1.5E-4
B 31	6.0	2670	1.5E-4	2.8E-5	1.3E-4	2.3E-5	3.3E-4	1.8E-4	1.5E-4	1.5E-4
B 33	6.1	2130	1.5E-4	9.0E-5	1.3E-4	2.5E-5	3.9E-4	2.4E-4	1.6E-4	1.6E-4
C 44	8.9	4380	2.3E-4	3.5E-5	1.1E-5	3.3E-6	2.8E-4	6.0E-5	1.6E-5	1.4E-5
C 45	8.3	4360	7.1E-4	2.4E-5	1.1E-6	3.3E-6	7.3E-4	8.5E-5	1.0E-5	5.5E-6
C 46	9.0	3230	9.1E-4	7.6E-5	2.8E-5	5.0E-6	1.0E-3	1.7E-4	4.0E-5	3.4E-5
AVERAGE			3.6E-4	4.5E-5	7.0E-5	1.4E-5	4.9E-4	1.5E-4	8.7E-5	8.5E-5
HIGH			9.1E-4	9.0E-5	1.3E-4	2.5E-5	1.0E-3	2.4E-4	1.6E-4	1.6E-4
LOW			2.3E-5	1.6E-5	1.1E-6	3.3E-6	1.9E-4	6.0E-5	1.0E-5	5.5E-6

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS - G/KG FUEL: 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	3.7E-4	1.5E-4	0.0	0.0	5.2E-4	9.4E-5	3.6E-6	7.8E-6
E 16	8.3	2760	1.1E-4	2.3E-5	3.5E-6	0.0	1.4E-4	2.0E-5	4.4E-6	4.0E-6
E 17	6.2	2770	1.1E-4	1.8E-5	1.2E-6	0.0	1.3E-4	1.5E-5	2.1E-6	1.7E-6
F 22	6.0	2980	6.2E-5	7.2E-4	2.9E-5	0.0	8.1E-4	4.3E-4	3.4E-5	3.2E-5
F 30	6.8	2890	2.8E-4	2.3E-4	5.8E-6	0.0	5.1E-4	1.4E-4	9.3E-6	7.8E-6
G 15	8.7	3230	3.8E-4	5.6E-4	1.2E-4	0.0	1.1E-3	4.3E-4	1.2E-4	1.2E-4
G 23	9.2	2320	3.4E-4	4.9E-4	1.3E-4	0.0	1.0E-3	4.1E-4	1.3E-4	1.3E-4
H 11	9.4	1980	7.3E-4	1.1E-4	1.3E-5	0.0	8.5E-4	1.0E-4	1.9E-5	2.5E-5
I 09	5.9	2700	2.6E-3	1.5E-2	2.8E-3	0.0	2.0E-2	1.1E-2	2.9E-3	3.1E-3
I 18	7.8	1670	5.3E-4	7.1E-3	2.3E-4	4.3E-5	7.9E-3	4.2E-3	3.2E-4	3.8E-4
J 15	7.9	1550	8.5E-5	1.9E-3	4.7E-5	3.6E-5	2.0E-3	2.0E-3	1.0E-4	1.1E-4
J 16	8.9	2570	4.0E-5	4.5E-3	2.3E-4	3.4E-5	4.8E-3	4.8E-3	2.9E-4	3.3E-4
K 18	9.8	1240	1.0E-4	0.0	4.5E-5	1.1E-4	2.6E-4	1.6E-4	1.6E-4	1.6E-4
AVERAGES			2.2E-4	3.4E-4	4.7E-5	0.0	6.0E-4	2.4E-4	5.1E-5	4.9E-5
SPREADER, NO REINJ FROM D.C.			6.4E-4	4.1E-3	4.8E-4	3.2E-5	5.2E-3	3.2E-3	5.5E-4	5.9E-4
MASS FIRED OVERFEED			2.6E-3	1.5E-2	2.8E-3	1.1E-4	2.0E-2	1.1E-2	2.9E-3	3.1E-3
HIGH			4.0E-5	1.8E-5	1.2E-6	3.4E-5	1.3E-4	1.5E-5	2.1E-6	1.7E-6
LOW										

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

ARSENIC

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210					2.2E-6			
A 35	6.0	3140					2.7E-6			
B 30	6.0	2710	7.7E-5	7.8E-4	4.5E-6	5.6E-6	8.6E-4	6.0E-4	1.6E-5	1.1E-5
B 31	6.0	2670	2.3E-4	3.1E-4	2.0E-5	2.9E-6	5.7E-4	2.8E-4	2.6E-5	2.3E-5
B 33	6.1	2130	2.2E-4	6.7E-4	2.0E-5	3.1E-6	9.1E-4	5.4E-4	3.0E-5	2.5E-5
C 44	8.9	4380	4.6E-4	4.6E-4	1.1E-5	5.0E-6	9.4E-4	4.0E-4	2.2E-5	1.7E-5
C 45	8.3	4360	2.1E-3	3.3E-4	5.8E-6	5.0E-6	2.5E-3	4.5E-4	2.8E-5	1.4E-5
C 46	9.0	3230	3.7E-3	2.4E-3	1.3E-5	7.5E-6	6.1E-3	2.2E-3	6.3E-5	2.9E-5
AVERAGE			8.4E-4	6.2E-4	9.3E-6	3.6E-6	1.5E-3	5.5E-4	2.4E-5	1.6E-5
HIGH			3.7E-3	2.4E-3	2.0E-5	7.5E-6	6.1E-3	2.2E-3	6.3E-5	2.9E-5
LOW			7.7E-5	3.1E-4	4.5E-6	2.9E-6	2.2E-6	2.2E-6	2.2E-6	2.2E-6

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	13.2	2070	4.9E-4	1.9E-3	0.0	0.0	2.4E-3	1.1E-3	1.7E-5	3.6E-5
E 16	8.3	2760	1.1E-4	1.4E-4	1.5E-5	0.0	2.7E-4	9.4E-5	1.7E-5	1.6E-5
E 17	6.2	2770	5.6E-4	1.7E-4	4.3E-6	0.0	7.3E-4	1.1E-4	9.4E-6	7.2E-6
F 22	6.0	2980	4.1E-4	2.2E-4	6.7E-6	0.0	6.3E-4	1.4E-4	1.1E-5	9.2E-6
F 30	6.8	2890	4.7E-4	2.0E-4	6.7E-6	0.0	6.8E-4	1.3E-4	1.1E-5	9.4E-6
G 15	8.7	3230	1.0E-3	8.9E-4	6.1E-6	0.0	1.9E-3	5.3E-4	1.9E-5	1.4E-5
G 20	9.2	2320	3.4E-4	4.9E-4	1.9E-5	0.0	8.5E-4	3.0E-4	2.5E-5	2.3E-5
H 11	9.4	1980	8.1E-3	2.2E-4	8.8E-5	0.0	8.4E-3	4.7E-4	1.5E-4	2.1E-4
I 09	5.9	2700	4.2E-3	6.0E-3	1.4E-2	0.0	2.4E-2	1.8E-2	1.4E-2	1.4E-2
I 18	7.8	1670	3.3E-3	1.2E-2	4.0E-3	7.1E-5	1.9E-2	1.1E-2	4.1E-3	4.3E-3
J 15	7.9	1550	8.5E-4	2.5E-3	2.8E-4	3.6E-5	3.6E-3	3.6E-3	3.4E-4	3.7E-4
J 16	8.9	2570	2.6E-5	2.2E-3	4.6E-4	5.7E-5	2.8E-3	2.8E-3	5.3E-4	5.5E-4
K 18	9.8	1280	3.0E-4	0.0	9.1E-5	2.3E-5	4.1E-4	1.2E-4	1.2E-4	1.2E-4
AVERAGES										
SPREADER,NO REINJ FROM D.C.			4.8E-4	3.5E-4	1.8E-5	0.0	8.4E-4	2.2E-4	1.6E-5	1.3E-5
MASS FIRED OVERFEED			2.5E-3	3.5E-3	2.7E-3	2.7E-5	8.7E-3	5.2E-3	2.8E-3	2.8E-3
HIGH			8.1E-3	1.2E-2	1.4E-2	7.1E-5	2.4E-2	1.8E-2	1.4E-2	1.4E-2
LOW			2.6E-5	1.4E-4	4.3E-6	2.3E-5	2.7E-4	9.4E-5	9.4E-6	7.2E-6

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

SELENIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210					8.4E-6			
A 35	6.6	3140					1.1E-5			
B 30	6.0	2710	7.7E-5	1.5E-4	6.3E-4	1.1E-4	1.0E-3	8.6E-4	7.4E-4	7.4E-4
B 31	6.0	2670	7.7E-5	7.9E-5	6.4E-4	1.1E-4	9.1E-4	8.2E-4	7.5E-4	7.5E-4
B 33	6.1	2130	7.3E-5	1.3E-4	6.5E-4	1.2E-4	1.0E-3	8.7E-4	7.8E-4	7.7E-4
C 44	8.9	4380	1.5E-3	6.7E-5	2.6E-5	0.0	1.6E-3	2.1E-4	3.7E-5	2.9E-5
C 45	8.3	4360	7.1E-4	2.9E-5	5.3E-6	0.0	7.4E-4	8.9E-5	1.0E-5	6.4E-6
C 46	9.0	3230	1.8E-3	1.1E-4	7.9E-5	0.0	2.0E-3	3.3E-4	9.3E-5	8.2E-5
AVERAGE			5.4E-4	7.0E-5	2.5E-4	4.4E-5	9.1E-4	4.0E-4	3.0E-4	3.0E-4
HIGH			1.8E-3	1.5E-4	6.5E-4	1.2E-4	2.0E-3	8.7E-4	7.8E-4	7.7E-4
LOW			7.3E-5	2.9E-5	5.3E-6	1.1E-4	8.4E-6	8.4E-6	8.4E-6	6.4E-6

• STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR •

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	1.2E-5	2.6E-5	0.0	0.0	3.8E-5	1.5E-5	2.7E-7	5.7E-7
E 16	8.3	2760	3.8E-4	2.3E-5	2.4E-5	0.0	4.3E-4	4.9E-5	2.7E-5	2.6E-5
E 17	6.2	2770	3.7E-4	5.5E-6	1.6E-6	0.0	3.8E-4	1.7E-5	4.3E-6	3.1E-6
F 22	6.0	2980	1.4E-3	4.8E-5	1.4E-5	0.0	1.4E-3	8.4E-5	2.4E-5	2.0E-5
F 30	6.8	2890	9.5E-4	4.5E-5	1.2E-5	0.0	1.0E-3	6.7E-5	1.8E-5	1.5E-5
G 15	8.7	3230	1.3E-4	1.1E-5	1.2E-4	0.0	2.5E-4	1.3E-4	1.2E-4	1.2E-4
G 20	9.2	2320	1.2E-4	6.9E-6	6.4E-5	0.0	1.9E-4	7.1E-5	6.4E-5	6.4E-5
H 11	9.4	1980	2.4E-5	3.4E-6	8.5E-6	0.0	3.6E-5	1.1E-5	8.7E-6	8.9E-6
I 09	5.9	2700	5.2E-5	7.5E-6	4.7E-4	0.0	5.3E-4	4.8E-4	4.7E-4	4.7E-4
I 18	7.8	1670	6.7E-5	1.2E-5	5.7E-3	5.7E-5	5.8E-3	5.7E-3	5.7E-3	5.7E-3
J 15	7.9	1550	5.7E-6	1.2E-5	1.9E-4	4.7E-5	2.5E-4	2.5E-4	2.4E-4	2.4E-4
J 16	8.9	2570	2.6E-6	1.1E-5	2.7E-4	4.6E-5	3.3E-4	3.3E-4	3.2E-4	3.2E-4
K 18	9.8	1280	2.0E-5	0.0	9.1E-5	1.1E-4	2.2E-4	2.1E-4	2.1E-4	2.1E-4
AVERAGES										
SPREADER,NO REINJ FROM D.C.			5.5E-4	2.3E-5	3.9E-5	0.0	6.1E-4	6.9E-5	4.3E-5	4.1E-5
MASS FIRED OVERFEED			2.6E-5	1.0E-5	1.0E-3	3.8E-5	1.0E-3	1.0E-3	1.0E-3	1.0E-3
HIGH			1.4E-3	4.8E-5	5.7E-3	1.1E-4	5.8E-3	5.7E-3	5.7E-3	5.7E-3
LOW			2.6E-6	3.4E-6	1.6E-6	4.6E-5	3.6E-5	1.1E-5	2.7E-7	5.7E-7

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

BROMINE

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS G/KG FUEL: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	2.3E-5	1.0E-5	1.2E-5	3.3E-5	7.9E-5	5.5E-5	4.6E-5	4.6E-5
B 31	6.0	2670	2.3E-5	4.3E-6	1.3E-5	3.4E-5	7.5E-5	5.3E-5	4.8E-5	4.7E-5
B 33	6.1	2130	7.3E-5	1.3E-5	1.3E-5	3.7E-5	1.4E-4	6.7E-5	5.1E-5	5.1E-5
C 44	8.9	4380	7.6E-5	1.2E-5	5.3E-7	0.0	8.9E-5	1.6E-5	1.1E-6	6.6E-7
C 45	8.3	4360	3.5E-5	5.6E-6	5.3E-7	0.0	4.1E-5	7.9E-6	8.2E-7	5.9E-7
C 46	9.0	3230	9.1E-5	1.9E-5	4.8E-7	0.0	1.1E-4	2.3E-5	1.2E-6	5.6E-7
AVERAGE			5.4E-5	1.1E-5	6.7E-6	1.8E-5	8.9E-5	3.7E-5	2.5E-5	2.4E-5
HIGH			9.1E-5	1.9E-5	1.3E-5	3.7E-5	1.4E-4	6.7E-5	5.1E-5	5.1E-5
LOW			2.3E-5	4.3E-6	4.8E-7	3.3E-5	4.1E-5	7.9E-6	8.2E-7	5.6E-7

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS G/KG FUEL: 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	3.7E-6	2.9E-5	0.0	0.0	3.2E-5	1.6E-5	2.3E-7	4.8E-7
E 16	8.3	2760	5.7E-5	2.3E-5	1.0E-4	0.0	1.8E-4	1.2E-4	1.8E-4	1.8E-4
E 17	6.2	2770	5.6E-5	3.7E-5	2.8E-6	0.0	1.0E-4	2.5E-5	3.5E-6	3.2E-6
F 22	6.0	2980	1.4E-4	2.4E-5	4.3E-5	0.0	2.8E-4	6.0E-5	4.4E-5	4.4E-5
F 33	6.8	2890	4.7E-5	2.3E-5	1.7E-5	0.0	8.7E-5	3.1E-5	1.8E-5	1.8E-5
G 15	8.7	3230	2.5E-4	3.3E-5	5.8E-5	0.0	3.4E-4	8.5E-5	6.0E-5	6.0E-5
G 20	9.2	2320	1.2E-4	2.9E-5	3.2E-4	0.0	4.7E-4	3.4E-4	3.2E-4	3.2E-4
H 11	9.4	1940	2.4E-5	1.1E-6	1.7E-5	0.0	4.2E-5	1.8E-5	1.7E-5	1.7E-5
I 09	5.9	2700	1.0E-4	5.2E-5	2.4E-3	0.0	2.5E-3	2.4E-3	2.4E-3	2.4E-3
I 10	7.8	1670	1.3E-4	4.7E-4	2.8E-4	2.1E-4	1.1E-3	7.6E-4	5.8E-4	5.1E-4
J 15	7.9	1550	2.0E-5	1.2E-4	1.9E-4	3.8E-4	6.3E-4	6.3E-4	4.9E-4	4.9E-4
J 16	8.9	2570	4.0E-6	1.7E-5	3.2E-4	2.9E-4	6.3E-4	6.3E-4	6.1E-4	6.1E-4
K 18	9.8	1280	2.0E-5	0.0	9.1E-5	1.7E-4	2.8E-4	2.6E-4	2.6E-4	2.6E-4
AVERAGES										
SPREADER, NO REINJ FROM D.C.			1.1E-4	2.8E-5	9.0E-5	0.0	2.3E-4	1.1E-4	9.1E-5	9.1E-5
MASS FIRED OVERFEED			4.4E-5	1.0E-4	4.6E-4	1.4E-4	7.5E-4	6.7E-4	6.0E-4	6.0E-4
HIGH			2.5E-4	4.7E-4	2.4E-3	3.8E-4	2.5E-3	2.4E-3	2.4E-3	2.4E-3
LOW			3.7E-6	1.1E-6	2.8E-6	1.7E-4	3.2E-5	1.6E-5	2.3E-7	4.8E-7

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

RUBIDIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	1.5E-3	6.0E-4	1.8E-6	3.3E-5	2.2E-3	6.2E-4	5.0E-5	3.8E-5
B 31	6.0	2670	1.5E-3	5.6E-4	3.9E-6	3.4E-5	2.1E-3	5.9E-4	5.3E-5	4.2E-5
B 33	6.1	2130	1.5E-3	7.4E-4	1.8E-6	3.7E-5	2.2E-3	7.2E-4	5.4E-5	4.2E-5
C 44	3.9	4360	1.5E-2	3.7E-4	7.9E-6	0.0	1.6E-2	1.6E-3	1.2E-4	3.1E-5
C 45	8.3	4360	1.4E-2	3.9E-4	5.3E-7	0.0	1.4E-2	1.5E-3	1.0E-4	2.2E-5
C 46	9.8	3230	9.1E-3	9.4E-4	1.6E-6	0.0	1.0E-2	1.5E-3	7.2E-5	1.7E-5
AVERAGE			7.2E-3	6.0E-4	2.9E-6	1.8E-5	7.8E-3	1.1E-3	7.5E-5	3.2E-5
HIGH			1.5E-2	9.4E-4	7.9E-6	3.7E-5	1.6E-2	1.6E-3	1.2E-4	4.2E-5
LOW			1.5E-3	3.7E-4	5.3E-7	3.3E-5	2.1E-3	5.9E-4	5.0E-5	1.7E-5

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	8.6E-4	1.0E-3	0.0	0.0	1.8E-3	5.7E-4	1.3E-5	2.8E-5
E 16	8.3	2760	5.7E-4	2.3E-4	6.9E-7	0.0	8.0E-4	1.4E-4	6.3E-6	3.9E-6
E 17	6.2	2770	5.6E-4	5.5E-4	4.1E-7	0.0	1.1E-3	3.2E-4	8.2E-6	4.9E-6
F 22	6.0	2980	2.1E-5	1.9E-5	2.1E-6	0.0	4.2E-5	1.3E-5	2.4E-6	2.3E-6
F 30	6.8	2890	3.3E-5	1.6E-5	2.9E-7	0.0	4.9E-5	1.0E-5	6.3E-7	4.8E-7
G 15	8.7	3230	3.8E-3	3.3E-4	5.8E-6	0.0	4.1E-3	3.1E-4	3.5E-5	2.2E-5
G 20	9.2	2320	1.4E-3	3.9E-4	2.5E-5	0.0	1.8E-3	2.9E-4	3.8E-5	3.3E-5
H 11	9.4	1980	5.6E-4	1.1E-4	1.3E-6	0.0	6.8E-4	8.1E-5	6.0E-6	1.1E-5
I 09	5.9	2700	2.1E-3	1.5E-3	3.8E-4	0.0	4.0E-3	1.3E-3	4.0E-4	4.3E-4
I 18	7.8	1670	5.3E-4	1.2E-3	1.7E-5	7.1E-7	1.7E-3	6.8E-4	3.0E-5	4.3E-5
J 15	7.9	1550	5.7E-5	4.9E-4	9.4E-6	0.0	5.6E-4	5.6E-4	1.3E-5	1.8E-5
J 16	8.9	2570	5.3E-5	2.2E-3	2.3E-5	4.0E-6	2.3E-3	2.3E-3	4.3E-5	6.1E-5
K 18	9.8	1280	1.5E-4	0.0	4.5E-6	2.3E-5	1.8E-4	3.2E-5	2.8E-5	3.0E-5
AVERAGES										
SPREADER, NO REINJ FROM D.C.			1.1E-3	2.6E-4	5.8E-6	0.0	1.3E-3	1.8E-4	1.5E-5	1.1E-5
MASS FIRED OVERFEED			6.1E-4	9.3E-4	6.2E-5	3.9E-6	1.6E-3	7.9E-4	7.6E-5	8.9E-5
HIGH			3.8E-3	2.2E-3	3.8E-4	2.3E-5	4.1E-3	2.3E-3	4.0E-4	4.3E-4
LOW			2.1E-5	1.6E-5	2.9E-7	7.1E-7	4.2E-5	1.0E-5	6.3E-7	4.8E-7

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

STRONTIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J STRONTIUM	EMISSIONS - G/KG FUEL 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP - MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	0.0	1.5E-2	6.3E-3	6.3E-5	3.3E-5	2.2E-2	6.2E-3	2.5E-4	1.3E-4
B 31	6.0	2670	0.0	2.3E-2	6.5E-3	6.4E-5	3.4E-5	3.0E-2	7.8E-3	3.1E-4	1.4E-4
B 33	6.1	2130	0.0	2.2E-2	1.0E-2	6.5E-5	1.2E-4	3.2E-2	1.8E-2	4.1E-4	2.4E-4
C 44	8.9	4380	0.0	1.5E+0	8.1E-3	2.6E-6	0.0	1.5E+0	1.4E-1	1.1E-2	2.3E-3
C 45	8.3	4360	0.0	7.1E-1	7.4E-3	1.1E-6	3.0E-5	7.1E-1	6.8E-2	5.0E-3	1.1E-3
C 46	9.0	3230	0.0	1.8E-1	6.8E-3	1.2E-5	0.0	1.9E-1	2.1E-2	1.3E-3	3.0E-4
AVERAGE				4.1E-1	7.5E-3	3.5E-5	3.7E-5	4.2E-1	4.2E-2	3.0E-3	7.0E-4
HIGH				1.5E+0	1.0E-2	6.5E-5	1.2E-4	1.5E+0	1.4E-1	1.1E-2	2.3E-3
LOW				1.5E-2	6.3E-3	1.1E-6	3.0E-5	2.2E-2	6.2E-3	2.5E-4	1.3E-4

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J STRONTIUM	EMISSIONS - G/KG FUEL 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP - MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	2.6	1.2E-3	4.7E-4	8.8	0.0	1.7E-3	3.8E-4	1.2E-5	2.5E-5
E 16	6.3	2760	1.9	1.9E-3	1.6E-3	3.1E-6	0.0	3.5E-3	9.4E-4	2.8E-5	1.7E-5
E 17	6.2	2770	0.0	1.9E-3	1.8E-3	4.1E-7	0.0	3.7E-3	1.1E-3	2.6E-5	1.5E-5
F 22	6.0	2980	1.0	2.1E-2	7.2E-4	5.7E-6	0.0	2.1E-2	1.1E-3	1.5E-4	9.1E-5
F 30	6.8	2890	2.4	1.4E-2	6.8E-4	2.9E-6	0.0	1.5E-2	8.3E-4	1.1E-4	6.2E-5
G 15	6.7	3230	2.2	2.5E-2	3.3E-3	2.3E-5	0.0	2.9E-2	2.7E-3	2.2E-4	1.4E-4
G 20	9.2	2320	1.4	1.5E-2	7.8E-4	6.5E-5	0.0	1.6E-2	1.0E-3	1.8E-4	1.3E-4
H 11	9.4	1980	0.0	3.2E-3	1.5E-4	2.5E-6	0.0	3.4E-3	1.9E-4	2.6E-5	5.3E-5
I 09	5.9	2700	0.0	1.0E-2	6.0E-4	4.7E-4	0.0	1.2E-2	1.1E-3	5.5E-4	6.4E-4
I 18	7.8	1670	2.5	2.0E-2	1.2E-3	1.7E-4	5.7E-6	2.1E-2	1.5E-3	3.2E-4	4.9E-4
J 15	7.9	1550	1.8	2.3E-3	6.2E-4	4.7E-5	5.9E-7	2.9E-3	2.9E-3	6.8E-5	9.1E-5
J 16	8.9	2570	0.0	1.1E-3	3.4E-4	9.1E-5	4.6E-6	1.5E-3	1.5E-3	1.1E-4	1.2E-4
K 18	9.8	1280	0.0	2.5E-3	0.0	2.7E-6	1.1E-5	2.5E-3	9.3E-5	3.1E-5	5.1E-5
AVERAGES											
SPREADER,NO REINJ FROM D.C.				1.3E-2	1.5E-3	1.7E-5	0.0	1.5E-2	1.3E-3	1.2E-4	7.5E-5
MASS FIRED OVERFEED				5.8E-3	4.8E-4	1.1E-4	3.2E-6	6.4E-3	1.1E-3	1.6E-4	2.1E-4
HIGH				2.5E-2	3.3E-3	4.7E-4	1.1E-5	2.9E-2	2.9E-3	5.5E-4	6.4E-4
LOW				1.1E-3	1.5E-4	4.1E-7	5.9E-7	1.5E-3	9.3E-5	1.2E-5	1.5E-5

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

YTTRIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS - G/KG FUEL: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	5.4E-4	1.3E-4	1.8E-6	2.2E-5	6.9E-4	1.7E-4	2.9E-5	2.5E-5
B 31	6.0	2670	5.4E-4	1.2E-4	2.6E-6	2.3E-5	6.8E-4	1.6E-4	3.8E-5	2.7E-5
B 33	6.1	2130	5.1E-4	3.1E-4	2.6E-6	2.5E-5	8.4E-4	3.0E-4	3.3E-5	2.9E-5
C 44	8.9	4380	3.8E-3	7.0E-5	1.1E-7	0.0	3.9E-3	3.9E-4	2.7E-5	5.9E-6
C 45	8.3	4360	3.5E-3	3.6E-5	1.1E-7	0.0	3.6E-3	3.4E-4	2.5E-5	5.4E-6
C 46	9.0	3230	2.7E-3	1.2E-4	7.9E-8	0.0	2.9E-3	3.3E-4	2.0E-5	4.4E-6
AVERAGE			1.9E-3	1.3E-4	1.2E-6	1.2E-5	2.1E-3	2.8E-4	2.7E-5	1.6E-5
HIGH			3.8E-3	3.1E-4	2.6E-6	2.5E-5	3.9E-3	3.9E-4	3.3E-5	2.9E-5
LOW			5.1E-4	3.6E-5	7.9E-8	2.2E-5	6.8E-4	1.6E-4	2.0E-5	4.4E-6

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS - G/KG FUEL: 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	13.2	2070	3.7E-3	7.2E-4	0.0	0.0	4.4E-3	5.2E-4	3.1E-5	6.6E-5
E 16	8.3	2760	1.1E-3	6.9E-4	1.4E-6	0.0	1.8E-3	4.2E-4	1.4E-5	8.7E-6
E 17	6.2	2770	5.6E-4	5.5E-4	2.4E-7	0.0	1.1E-3	3.2E-4	8.8E-6	4.7E-6
F 22	6.0	2980	2.1E-3	7.2E-5	2.1E-6	0.0	2.1E-3	1.1E-4	1.7E-5	1.1E-5
F 30	6.8	2890	1.4E-3	6.8E-5	5.8E-7	0.0	1.5E-3	8.3E-5	1.1E-5	6.5E-6
G 15	8.7	3230	1.0E-3	8.9E-5	1.2E-5	0.0	1.1E-3	9.3E-5	1.9E-5	1.6E-5
G 20	9.2	2320	1.4E-3	7.8E-5	6.5E-6	0.0	1.5E-3	9.4E-5	1.7E-5	1.2E-5
H 11	9.4	1980	7.3E-4	3.4E-5	2.1E-6	0.0	7.6E-4	4.4E-5	7.4E-6	1.4E-5
I 09	5.9	2700	1.6E-3	6.0E-5	9.4E-5	0.0	1.7E-3	1.8E-4	1.1E-4	1.2E-4
I 18	7.8	1670	2.0E-3	1.2E-4	4.0E-5	7.1E-6	2.2E-3	1.8E-4	6.2E-5	7.8E-5
J 15	7.9	1550	1.4E-4	4.9E-5	4.7E-6	5.9E-6	2.0E-4	2.0E-4	1.2E-5	1.3E-5
J 16	8.9	2570	4.8E-5	2.8E-5	4.1E-5	5.7E-6	1.1E-4	1.1E-4	4.7E-5	4.8E-5
K 18	9.8	1280	2.8E-4	0.0	9.1E-6	4.6E-5	2.5E-4	6.1E-5	5.6E-5	5.8E-5
AVERAGES										
SPREADER, NO REINJ FROM D.C.			1.3E-3	2.6E-4	3.8E-6	0.0	1.5E-3	1.9E-4	1.4E-5	1.0E-5
MASS FIRED OVERFEED			1.2E-3	1.4E-4	2.7E-5	9.2E-6	1.4E-3	1.8E-4	4.6E-5	5.6E-5
HIGH			3.7E-3	7.2E-4	9.4E-5	4.6E-5	4.4E-3	5.2E-4	1.1E-4	1.2E-4
LOW			4.8E-5	2.8E-5	2.4E-7	5.7E-6	1.1E-4	4.4E-5	7.4E-6	4.7E-6

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

G/KG FUEL

ZIRCONIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	3.1E-4	2.9E-5	1.3E-5	4.5E-5	3.9E-4	1.1E-4	5.9E-5	5.8E-5
B 31	6.0	2670	7.7E-4	1.6E-4	1.3E-6	4.6E-5	1.0E-3	2.3E-4	5.4E-5	4.9E-5
B 33	6.1	2130	1.5E-3	3.0E-4	6.5E-5	5.0E-5	1.9E-3	4.7E-4	1.3E-4	1.2E-4
C 44	8.9	4380	2.3E-2	4.0E-4	1.0E-6	0.0	2.3E-2	2.3E-3	1.6E-4	3.7E-5
C 45	8.3	4360	2.1E-2	2.9E-4	2.1E-6	0.0	2.1E-2	2.1E-3	1.5E-4	3.4E-5
C 46	9.0	3230	6.4E-3	2.5E-4	1.6E-5	0.0	6.7E-3	7.6E-4	6.2E-5	2.6E-5
AVERAGE			8.8E-3	2.4E-4	1.6E-5	2.3E-5	9.1E-3	1.0E-3	1.0E-4	5.3E-5
HIGH			2.3E-2	4.0E-4	6.5E-5	5.0E-5	2.3E-2	2.3E-3	1.6E-4	1.2E-4
LOW			3.1E-4	2.9E-5	1.3E-6	4.5E-5	3.9E-4	1.1E-4	5.4E-5	2.6E-5

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	1.2E-3	2.4E-4	0.0	0.0	1.5E-3	1.7E-4	1.0E-5	2.2E-5
E 16	8.3	2760	3.8E-3	2.1E-3	3.5E-5	0.0	5.9E-3	1.3E-3	7.6E-5	5.8E-5
E 17	6.2	2770	3.7E-3	1.7E-3	4.1E-7	0.0	5.4E-3	1.0E-3	3.8E-5	2.2E-5
F 22	6.0	2980	6.2E-3	2.2E-4	2.1E-5	0.0	6.4E-3	3.4E-4	6.6E-5	4.7E-5
F 30	6.8	2890	4.3E-3	2.0E-4	3.5E-6	0.0	4.5E-3	2.5E-4	3.5E-5	2.1E-5
G 15	8.7	3230	1.3E-2	3.3E-4	2.3E-5	0.0	1.3E-2	6.1E-4	1.1E-4	7.5E-5
G 20	9.2	2320	5.2E-3	4.9E-4	2.5E-5	0.0	5.7E-3	4.6E-4	6.5E-5	4.8E-5
H 11	9.4	1960	2.4E-3	7.5E-5	1.3E-5	0.0	2.5E-3	1.3E-4	3.0E-5	5.0E-5
I 39	5.9	2700	5.2E-3	1.5E-4	2.8E-4	0.0	5.7E-3	5.3E-4	3.2E-4	3.6E-4
I 18	7.8	1670	3.3E-3	2.4E-4	5.7E-5	2.1E-5	3.6E-3	3.1E-4	1.0E-4	1.3E-4
J 15	7.9	1550	5.7E-4	2.5E-4	2.8E-5	1.8E-5	8.6E-4	8.6E-4	5.2E-5	5.8E-5
J 16	8.9	2570	6.6E-5	1.1E-4	9.1E-5	1.7E-5	2.9E-4	2.9E-4	1.1E-4	1.1E-4
K 18	9.8	1280	3.0E-4	0.0	2.3E-5	1.1E-4	4.3E-4	1.5E-4	1.4E-4	1.4E-4
AVERAGES										
SPREADER, NO REINJ FROM D.C.			6.8E-3	8.3E-4	1.8E-5	0.0	6.8E-3	6.6E-4	6.6E-5	4.5E-5
MASS FIRED OVERFEED			1.9E-3	1.5E-4	7.0E-5	2.4E-5	2.1E-3	3.5E-4	1.1E-4	1.3E-4
HIGH			1.3E-2	2.1E-3	2.8E-4	1.1E-4	1.3E-2	1.3E-3	3.2E-4	3.6E-4
LOW			6.6E-5	7.5E-5	4.1E-7	1.7E-5	2.9E-4	1.3E-4	1.0E-5	2.1E-5

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

G/KG FUEL

NIOBIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.8	2710	3.8E-5	8.1E-6	1.9E-5	2.2E-5	8.7E-5	5.0E-5	4.1E-5	4.1E-5
B 31	6.0	2670	2.3E-4	1.7E-5	1.9E-5	2.3E-5	2.9E-4	7.5E-5	4.4E-5	4.2E-5
B 33	6.1	2130	1.5E-4	1.7E-5	5.2E-5	2.5E-5	2.4E-4	1.0E-4	7.8E-5	7.7E-5
C 44	8.9	4360	1.5E-3	4.2E-5	5.3E-6	0.0	1.6E-3	1.7E-4	1.6E-5	7.6E-6
C 45	8.3	4360	1.4E-3	3.5E-5	1.1E-6	0.0	1.4E-3	1.5E-4	1.1E-5	3.2E-6
C 46	9.0	3230	4.6E-4	6.3E-5	7.9E-6	0.0	5.3E-4	1.0E-4	1.2E-5	8.7E-6
AVERAGE			6.3E-4	3.0E-5	1.7E-5	1.2E-5	6.9E-4	1.1E-4	3.4E-5	3.0E-5
HIGH			1.5E-3	6.3E-5	5.2E-5	2.5E-5	1.6E-3	1.7E-4	7.8E-5	7.7E-5
LOW			3.8E-5	8.1E-6	1.1E-6	2.2E-5	8.7E-5	5.0E-5	1.1E-5	3.2E-6

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 10.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	1.2E-4	1.0E-5	0.0	0.0	1.3E-4	1.0E-5	9.3E-7	2.8E-6
E 16	8.3	2760	1.1E-4	1.4E-4	3.5E-5	0.0	2.9E-4	1.1E-4	3.6E-5	3.6E-5
E 17	6.2	2770	1.1E-4	1.1E-4	2.0E-7	0.0	2.2E-4	6.5E-5	1.8E-6	1.1E-6
F 22	6.0	2980	4.1E-4	1.4E-5	5.7E-5	0.0	4.8E-4	7.8E-5	6.0E-5	5.9E-5
F 30	6.8	2890	2.8E-4	1.4E-5	1.2E-5	0.0	3.1E-4	2.8E-5	1.4E-5	1.3E-5
G 15	8.7	3230	3.8E-4	2.2E-5	4.1E-5	0.0	4.4E-4	6.5E-5	4.4E-5	4.2E-5
G 20	9.2	2320	5.2E-4	2.9E-5	1.3E-4	0.0	6.7E-4	1.6E-4	1.3E-4	1.3E-4
H 11	9.4	1980	4.8E-5	2.2E-6	1.3E-5	0.0	6.3E-5	1.5E-5	1.3E-5	1.3E-5
I 09	5.9	2700	2.6E-4	1.5E-5	9.4E-4	0.0	1.2E-3	1.0E-3	9.4E-4	9.4E-4
I 18	7.8	1670	3.3E-4	1.2E-5	5.7E-5	7.1E-6	4.1E-4	8.1E-5	6.6E-5	6.9E-5
J 15	7.9	1550	1.4E-5	1.2E-5	4.7E-5	5.9E-6	7.9E-5	7.9E-5	5.3E-5	5.3E-5
J 16	8.9	2570	1.1E-5	1.1E-5	9.1E-5	5.7E-6	1.2E-4	1.2E-4	1.0E-4	1.0E-4
K 18	9.8	1280	2.0E-5	0.0	9.1E-6	4.6E-5	7.5E-5	5.5E-5	5.5E-5	5.5E-5
AVERAGES										
SPREADER, NO REINJ FROM D.C.			3.8E-4	5.5E-5	4.5E-5	0.0	4.8E-4	8.5E-5	4.8E-5	4.7E-5
MASS FIRED OVERFEED			1.2E-4	9.0E-6	1.7E-4	9.2E-6	3.0E-4	1.9E-4	1.8E-4	1.8E-4
HIGH			5.2E-4	1.4E-4	9.4E-4	4.6E-5	1.2E-3	1.0E-3	9.4E-4	9.4E-4
LOW			1.1E-5	2.2E-6	2.0E-7	5.7E-6	6.3E-5	1.0E-5	9.3E-7	1.1E-6

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

G/KG FUEL

MOLYBDENUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS - G/KG FUEL: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210					6.4E-5			
A 35	6.0	3140					7.8E-5			
B 30	6.0	2710	2.3E-5	3.2E-4	4.4E-3	1.1E-4	4.9E-3	4.8E-3	4.5E-3	4.5E-3
B 31	6.0	2670	1.5E-4	2.1E-4	4.5E-3	1.1E-4	4.9E-3	4.7E-3	4.6E-3	4.6E-3
B 33	6.1	2130	7.3E-5	2.1E-4	1.3E-2	1.2E-4	1.3E-2	1.3E-2	1.3E-2	1.3E-2
C 44	8.9	4380	2.3E-3	5.6E-4	1.3E-3	0.0	4.2E-3	1.9E-3	1.3E-3	1.3E-3
C 45	8.3	4360	2.1E-3	3.2E-4	5.3E-4	0.0	3.0E-3	1.0E-3	5.5E-4	5.3E-4
C 46	9.0	3230	6.4E-4	2.8E-4	1.2E-3	0.0	2.1E-3	1.5E-3	1.2E-3	1.2E-3
AVERAGE			6.6E-4	2.4E-4	3.1E-3	4.4E-5	4.1E-3	3.4E-3	3.2E-3	3.2E-3
HIGH			2.3E-3	5.6E-4	1.3E-2	1.2E-4	1.3E-2	1.3E-2	1.3E-2	1.3E-2
LOW			2.3E-5	2.1E-4	5.3E-4	1.1E-4	6.4E-5	6.4E-5	6.4E-5	6.4E-5

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS - G/KG FUEL: 10.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	1.2E-4	1.0E-3	0.0	0.0	1.1E-3	5.3E-4	7.6E-6	1.6E-5
E 16	8.3	2760	1.7E-4	6.9E-4	3.5E-4	0.0	1.2E-3	7.3E-4	3.5E-4	3.5E-4
E 17	6.2	2770	5.6E-5	1.7E-4	1.2E-4	0.0	3.4E-4	2.2E-4	1.2E-4	1.2E-4
F 22	6.0	2980	6.2E-4	2.2E-4	7.1E-4	0.0	1.5E-3	8.5E-4	7.2E-4	7.2E-4
F 30	6.8	2890	4.7E-4	2.0E-4	5.8E-4	0.0	1.3E-3	7.0E-4	5.8E-4	5.8E-4
G 15	8.7	3230	1.0E-4	3.3E-5	1.8E-3	0.0	1.9E-3	1.8E-3	1.8E-3	1.8E-3
G 20	9.2	2320	8.6E-5	1.0E-4	1.9E-3	0.0	2.1E-3	2.0E-3	1.9E-3	1.9E-3
H 11	9.4	1980	2.4E-4	2.2E-4	1.7E-3	0.0	2.2E-3	1.8E-3	1.7E-3	1.7E-3
I 09	5.9	2700	1.0E-3	3.7E-4	4.7E-3	0.0	6.1E-3	4.9E-3	4.7E-3	4.7E-3
I 18	7.8	1670	2.0E-4	7.1E-4	5.7E-3	3.6E-4	6.9E-3	6.4E-3	6.0E-3	6.0E-3
J 15	7.9	1550	8.5E-6	1.9E-4	2.8E-3	3.0E-4	3.3E-3	3.3E-3	3.1E-3	3.1E-3
J 16	8.9	2570	4.0E-6	5.6E-4	2.3E-3	2.9E-4	3.1E-3	3.1E-3	2.6E-3	2.6E-3
K 18	9.8	1280	3.0E-5	0.0	4.1E-3	1.1E-4	4.2E-3	4.2E-3	4.2E-3	4.2E-3
AVERAGES										
SPREADER, NO REINJ FROM D.C.			2.5E-4	2.3E-4	9.0E-4	0.0	1.4E-3	1.0E-3	9.1E-4	9.0E-4
MASS FIRED OVERFEED			2.4E-4	4.3E-4	3.0E-3	1.5E-4	3.8E-3	3.5E-3	3.2E-3	3.2E-3
HIGH			1.0E-3	1.0E-3	5.7E-3	3.6E-4	6.9E-3	6.4E-3	6.0E-3	6.0E-3
LOW			4.0E-6	3.3E-5	1.2E-4	1.1E-4	3.4E-4	2.2E-4	7.6E-6	1.6E-5

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

G/KG FUEL

RUTHENIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2718	2.3E-5	1.5E-6	2.5E-6	4.5E-5	7.1E-5	5.0E-5	4.7E-5	4.7E-5
B 31	6.0	2670	2.3E-5	1.4E-6	2.6E-6	4.6E-5	7.3E-5	5.2E-5	4.9E-5	4.9E-5
B 33	6.1	2130	2.2E-5	2.3E-6	2.6E-6	5.0E-5	7.7E-5	5.6E-5	5.3E-5	5.2E-5
C **	8.9	4380	2.3E-5	5.6E-7	5.3E-7	0.0	2.4E-5	3.0E-6	6.9E-7	5.6E-7
C 45	8.3	4360	2.1E-5	4.7E-7	5.3E-7	0.0	2.2E-5	2.7E-6	6.8E-7	5.6E-7
C 46	9.0	3230	2.7E-5	9.5E-7	7.9E-7	0.0	2.9E-5	3.9E-6	1.0E-6	8.4E-7
AVERAGE			2.3E-5	1.2E-6	1.6E-6	2.3E-5	4.9E-5	2.8E-5	2.5E-5	2.5E-5
HIGH			2.7E-5	2.3E-6	2.6E-6	5.0E-5	7.7E-5	5.6E-5	5.3E-5	5.2E-5
LOW			2.1E-5	4.7E-7	5.3E-7	4.5E-5	2.2E-5	2.7E-6	6.8E-7	5.6E-7

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2678	2.4E-6	2.3E-6	0.0	0.0	4.8E-6	1.4E-6	3.4E-8	7.2E-8
E 16	4.3	2760	5.7E-6	2.1E-6	1.7E-6	0.0	1.0E-5	3.0E-6	1.0E-6	1.0E-6
E 17	6.2	2770	1.7E-5	1.7E-6	1.2E-6	0.0	2.0E-5	2.7E-0	1.3E-6	1.3E-6
F 22	6.0	2980	2.1E-5	2.2E-6	5.7E-6	0.0	2.8E-5	7.6E-6	5.9E-6	5.8E-6
F 33	6.8	2690	1.4E-5	2.0E-6	5.8E-6	0.0	2.2E-5	7.3E-6	5.9E-6	5.8E-6
G 15	8.7	3230	1.1E-5	1.0E-6	1.2E-5	0.0	2.4E-5	1.3E-5	1.2E-5	1.2E-5
G 23	9.2	2320	8.6E-6	4.9E-7	1.3E-5	0.0	2.2E-5	1.4E-5	1.3E-5	1.3E-5
H 11	9.4	1980	2.4E-6	1.1E-7	8.5E-6	0.0	1.1E-5	8.6E-6	8.5E-6	8.5E-6
I 09	5.9	2730	2.6E-6	3.7E-7	4.7E-4	0.0	4.7E-4	4.7E-4	4.7E-4	4.7E-4
I 18	7.8	1670	6.0E-6	7.1E-7	4.0E-5	4.3E-5	8.9E-5	8.3E-5	8.2E-5	8.2E-5
J 15	7.9	1550	2.5E-7	3.1E-7	2.8E-5	3.6E-5	6.4E-5	6.4E-5	6.4E-5	6.4E-5
J 16	8.9	2570	1.2E-7	5.1E-7	4.1E-5	3.4E-5	7.6E-5	7.6E-5	7.5E-5	7.5E-5
K 18	9.8	1280	2.0E-6	0.0	4.5E-5	2.3E-4	2.8E-4	2.7E-4	2.7E-4	2.7E-4
AVERAGES										
SPREADER,NO REINJ FROM D.C.			1.3E-5	1.6E-6	6.5E-6	0.0	2.1E-5	7.8E-6	6.6E-6	6.6E-6
MASS FIRED OVERFEED			2.3E-6	6.2E-7	9.0E-5	4.9E-5	1.4E-4	1.4E-4	1.4E-4	1.4E-4
HIGH			2.1E-5	2.3E-6	4.7E-4	2.3E-4	4.7E-4	4.7E-4	4.7E-4	4.7E-4
LOW			1.2E-7	1.1E-7	1.2E-6	3.4E-5	4.8E-6	1.4E-6	3.4E-8	7.2E-8

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

G/KG FUEL

RHODIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.8	2710	3.8E-6	2.2E-6	6.2E-7	1.1E-5	1.8E-5	1.4E-5	1.2E-5	1.2E-5
B 31	6.0	2670	3.8E-6	1.4E-6	6.5E-7	1.1E-5	1.7E-5	1.4E-5	1.2E-5	1.2E-5
B 33	6.1	2130	3.6E-6	1.3E-6	6.6E-7	1.2E-5	1.8E-5	1.4E-5	1.3E-5	1.3E-5
C 44	8.9	4380	2.3E-5	3.2E-7	2.6E-7	0.0	2.3E-5	2.5E-6	4.3E-7	3.0E-7
C 45	8.3	4360	7.1E-6	3.4E-7	2.6E-7	0.0	7.7E-6	1.1E-6	3.2E-7	2.8E-7
C 46	9.0	3230	9.1E-6	5.7E-7	2.0E-7	1.0E-5	2.0E-5	1.1E-5	1.0E-5	1.0E-5
AVERAGE			8.4E-6	1.0E-6	4.4E-7	7.5E-6	1.7E-5	9.5E-6	8.0E-6	8.0E-6
HIGH			2.3E-5	2.2E-6	6.6E-7	1.2E-5	2.3E-5	1.4E-5	1.3E-5	1.3E-5
LOW			3.6E-6	3.2E-7	2.0E-7	1.0E-5	7.7E-6	1.1E-6	3.2E-7	2.8E-7

• STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR •

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 10.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	8.6E-7	2.1E-6	0.0	0.0	2.9E-6	1.2E-6	2.1E-8	4.4E-8
E 16	8.3	2760	3.8E-6	4.6E-7	6.9E-7	0.0	5.0E-6	1.1E-6	7.2E-7	7.1E-7
E 17	6.2	2770	3.7E-6	3.7E-7	8.1E-7	0.0	4.9E-6	1.1E-6	8.4E-7	8.3E-7
F 22	6.0	2980	1.4E-5	4.8E-7	2.9E-6	0.0	1.7E-5	3.6E-6	3.0E-6	2.9E-6
F 30	6.8	2890	9.5E-6	4.5E-7	2.3E-6	0.0	1.2E-5	2.9E-6	2.4E-6	2.3E-6
G 15	8.7	3230	2.5E-6	4.4E-7	1.2E-5	0.0	1.5E-5	1.2E-5	1.2E-5	1.2E-5
G 20	9.2	2320	3.4E-6	2.0E-7	1.3E-5	0.0	1.6E-5	1.3E-5	1.3E-5	1.3E-5
H 11	9.4	1940	2.4E-6	1.1E-7	3.4E-6	0.0	5.9E-6	3.5E-6	3.4E-6	3.4E-6
I 09	9.9	2700	2.6E-6	6.7E-7	1.9E-4	0.0	1.9E-4	1.9E-4	1.9E-4	1.9E-4
I 18	7.8	1670	3.3E-6	1.2E-6	2.3E-5	2.1E-5	4.9E-5	4.5E-5	4.4E-5	4.4E-5
J 15	7.9	1550	2.5E-7	5.6E-7	1.4E-5	1.8E-5	3.3E-5	3.3E-5	3.2E-5	3.2E-5
J 16	8.9	2570	1.2E-7	5.1E-7	2.3E-5	1.7E-5	4.1E-5	4.1E-5	4.0E-5	4.0E-5
K 18	9.8	1280	1.0E-6	0.0	1.4E-5	1.1E-4	1.3E-4	1.3E-4	1.3E-4	1.3E-4
AVERAGES										
SPREADER,NO REINJ FROM D.C.			6.1E-6	4.0E-7	5.2E-6	0.0	1.2E-5	5.6E-6	5.2E-6	5.2E-6
MASS FIRED OVERFEED			1.5E-6	7.3E-7	3.8E-5	2.4E-5	6.4E-5	6.3E-5	6.2E-5	6.2E-5
HIGH			1.4E-5	2.1E-6	1.9E-4	1.1E-4	1.9E-4	1.9E-4	1.9E-4	1.9E-4
LOW			1.2E-7	1.1E-7	6.9E-7	1.7E-5	2.9E-6	1.1E-6	2.1E-8	4.4E-8

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

G/KG FUEL

PALADIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	1.5E-5	1.3E-6	6.2E-6	4.5E-5	6.7E-5	5.3E-5	5.1E-5	5.1E-5
B 31	6.0	2670	1.5E-5	1.2E-6	6.5E-6	4.6E-5	6.9E-5	5.5E-5	5.3E-5	5.2E-5
B 33	6.1	2130	2.9E-5	2.1E-6	6.6E-6	5.0E-5	8.8E-5	6.0E-5	5.7E-5	5.6E-5
C 44	8.9	4380	5.3E-5	8.8E-7	5.3E-7	0.0	5.5E-5	5.9E-6	9.1E-7	6.1E-7
C 45	8.3	4360	4.9E-5	8.6E-7	5.3E-7	0.0	5.1E-5	5.5E-6	8.8E-7	6.0E-7
C 46	9.0	3230	6.4E-5	1.3E-6	4.0E-7	0.0	6.6E-5	7.0E-6	8.5E-7	4.9E-7
AVERAGE			3.8E-5	1.3E-6	3.5E-6	2.3E-5	6.6E-5	3.1E-5	2.7E-5	2.7E-5
HIGH			6.4E-5	2.1E-6	6.6E-6	5.0E-5	8.8E-5	6.0E-5	5.7E-5	5.6E-5
LOW			1.5E-5	8.6E-7	4.0E-7	4.5E-5	5.1E-5	5.5E-6	8.5E-7	4.9E-7

• STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR •

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 10.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	6.1E-6	2.8E-6	0.0	0.0	8.9E-6	1.7E-6	6.3E-8	1.3E-7
E 16	8.3	2760	1.1E-5	1.4E-6	3.1E-6	0.0	1.6E-5	4.2E-6	3.2E-6	3.2E-6
E 17	6.2	2770	1.1E-5	1.7E-6	1.2E-6	0.0	1.4E-5	2.5E-6	1.3E-6	1.3E-6
F 22	6.0	2980	4.1E-5	1.4E-6	1.4E-5	0.0	5.7E-5	1.6E-5	1.5E-5	1.4E-5
F 30	6.8	2890	2.8E-5	1.4E-6	5.8E-6	0.0	3.5E-5	7.4E-6	6.0E-6	5.9E-6
G 15	8.7	3230	6.3E-6	2.2E-6	1.2E-5	0.0	2.0E-5	1.3E-5	1.2E-5	1.2E-5
G 20	9.2	2320	1.5E-5	8.8E-7	1.3E-5	0.0	2.9E-5	1.4E-5	1.3E-5	1.3E-5
H 11	9.4	1980	4.8E-6	7.5E-7	1.3E-5	0.0	1.8E-5	1.3E-5	1.3E-5	1.3E-5
I 09	5.9	2700	1.0E-5	3.7E-7	4.7E-4	0.0	4.8E-4	4.7E-4	4.7E-4	4.7E-4
I 18	7.8	1670	1.3E-5	7.1E-7	5.7E-5	4.3E-5	1.1E-4	1.0E-4	1.0E-4	1.0E-4
J 15	7.9	1550	1.1E-6	2.5E-6	4.7E-5	3.6E-5	8.6E-5	8.6E-5	8.3E-5	8.3E-5
J 16	8.9	2570	6.6E-7	2.8E-6	9.1E-5	3.4E-5	1.3E-4	1.3E-4	1.3E-4	1.3E-4
K 16	9.8	1280	3.0E-6	0.0	4.5E-5	2.3E-4	2.8E-4	2.7E-4	2.7E-4	2.7E-4
AVERAGES										
SPREADER,NO REINJ FROM D.C.			1.9E-5	1.5E-6	8.1E-6	0.0	2.9E-5	1.8E-5	8.3E-6	8.2E-6
MASS FIRED OVERFEED			5.6E-6	1.4E-6	1.0E-4	4.9E-5	1.6E-4	1.5E-4	1.5E-4	1.5E-4
HIGH			4.1E-5	2.8E-6	4.7E-4	2.3E-4	4.8E-4	4.7E-4	4.7E-4	4.7E-4
LOW			6.6E-7	3.7E-7	1.2E-6	3.4E-5	8.9E-6	1.7E-6	6.3E-8	1.3E-7

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

G/KG FUEL

SILVER

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 13 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	7.7E-6	2.4E-5	1.3E-3	2.2E-5	1.3E-3	1.3E-3	1.3E-3	1.3E-3
B 31	6.0	2670	7.7E-6	2.6E-5	5.1E-4	2.3E-5	5.7E-4	5.5E-4	5.3E-4	5.3E-4
B 33	6.1	2130	2.9E-5	2.0E-4	6.5E-4	2.5E-5	9.0E-4	8.3E-4	6.8E-4	6.7E-4
C 44	8.9	4380	3.0E-5	1.6E-5	7.9E-4	3.3E-6	8.4E-4	8.1E-4	7.9E-4	7.9E-4
C 45	8.3	4360	1.4E-5	1.3E-5	1.1E-4	3.3E-6	1.4E-4	1.2E-4	1.1E-4	1.1E-4
C 46	9.0	3230	3.7E-2	2.8E-3	7.9E-4	5.0E-6	4.0E-2	6.1E-3	1.1E-3	8.6E-4
AVERAGE			6.1E-3	5.1E-4	6.8E-4	1.4E-5	7.3E-3	1.6E-3	7.4E-4	7.1E-4
HIGH			3.7E-2	2.8E-3	1.3E-3	2.5E-5	4.0E-2	6.1E-3	1.3E-3	1.3E-3
LOW			7.7E-6	1.3E-5	1.1E-4	3.3E-6	1.4E-4	1.2E-4	1.1E-4	1.1E-4

• STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR •

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 18.3 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	13.2	2870	6.1E-6	1.5E-5	0.0	0.0	2.1E-5	8.4E-6	1.5E-7	3.2E-7
E 16	8.3	2760	1.9E-6	6.9E-6	1.0E-6	0.0	1.0E-5	4.9E-6	1.1E-6	1.1E-6
E 17	6.2	2773	3.7E-6	1.8E-6	1.6E-6	0.0	7.2E-6	2.8E-6	1.7E-6	1.6E-6
F 22	6.0	2980	6.8E-6	2.2E-5	7.1E-6	0.0	3.6E-5	1.9E-5	7.3E-6	7.3E-6
F 30	6.8	2890	4.7E-6	2.3E-7	2.3E-6	0.0	7.3E-6	2.6E-6	2.3E-6	2.3E-6
G 15	9.7	3230	2.5E-5	2.2E-5	1.2E-5	0.0	5.9E-5	2.5E-5	1.2E-5	1.2E-5
G 20	9.2	2320	1.4E-5	4.9E-6	3.8E-3	0.0	3.8E-3	3.8E-3	3.8E-3	3.8E-3
H 11	9.4	1980	2.4E-5	3.7E-6	2.1E-5	0.0	4.9E-5	2.4E-5	2.1E-5	2.2E-5
I 09	5.9	2700	1.0E-4	3.7E-5	1.4E-3	0.0	1.6E-3	1.4E-3	1.4E-3	1.4E-3
I 10	7.8	1670	3.3E-6	4.7E-5	3.4E-5	1.4E-5	1.0E-4	7.4E-5	4.9E-5	4.9E-5
J 15	7.9	1550	5.7E-6	3.1E-5	4.7E-5	4.7E-6	8.8E-5	8.8E-5	5.2E-5	5.2E-5
J 16	8.9	2570	4.0E-6	4.5E-5	9.1E-5	4.6E-5	1.9E-4	1.9E-4	1.4E-4	1.4E-4
K 18	3.8	1280	2.0E-6	0.0	4.5E-6	5.7E-4	5.8E-4	5.8E-4	5.8E-4	5.8E-4
AVERAGES										
SPREADER,NO REINJ FROM D.C.			9.4E-6	1.0E-5	6.4E-4	0.0	6.6E-4	6.4E-4	6.4E-4	6.4E-4
MASS FIRED OVERFEED			2.1E-5	2.6E-5	2.3E-4	9.1E-5	3.7E-4	3.4E-4	3.2E-4	3.2E-4
HIGH			1.8E-4	4.7E-5	3.8E-3	5.7E-4	3.8E-3	3.8E-3	3.8E-3	3.8E-3
LOW			1.9E-6	2.3E-7	1.0E-6	4.7E-6	7.2E-6	2.6E-6	1.5E-7	3.2E-7

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

G/KG FUEL

CADMIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210					3.2E-5			
A 35	6.0	3140					4.3E-5			
B 30	6.0	2710	1.5E-5	6.9E-6	1.9E-5	1.1E-4	1.5E-4	1.4E-4	1.3E-4	1.3E-4
B 31	6.0	2670	4.6E-5	2.0E-5	1.9E-5	1.1E-4	2.0E-4	1.5E-4	1.3E-4	1.3E-4
B 33	6.1	2130	7.3E-5	1.2E-5	1.9E-5	1.2E-4	2.3E-4	1.6E-4	1.4E-4	1.4E-4
C 44	8.9	4380	7.6E-5	1.8E-5	1.3E-5	0.0	1.1E-4	3.3E-5	1.4E-5	1.3E-5
C 45	8.3	4360	7.1E-6	1.4E-5	3.2E-6	0.0	2.4E-5	1.4E-5	3.3E-6	3.2E-6
C 46	9.0	3230	1.8E-4	3.3E-5	4.0E-5	0.0	2.6E-4	8.0E-5	4.1E-5	4.0E-5
AVERAGE			5.0E-5	1.3E-5	1.4E-5	4.4E-5	1.3E-4	8.1E-5	6.8E-5	6.7E-5
HIGH			1.8E-4	3.3E-5	4.0E-5	1.2E-4	2.6E-4	1.6E-4	1.4E-4	1.4E-4
LOW			7.1E-6	6.9E-6	3.2E-6	1.1E-4	2.4E-5	1.4E-5	3.3E-6	3.2E-6

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	1.2E-5	2.4E-4	0.0	0.0	2.5E-4	1.3E-4	1.7E-6	3.7E-6
E 16	8.3	2760	5.7E-5	6.9E-6	1.0E-5	0.0	7.5E-5	1.6E-5	1.1E-5	1.1E-5
E 17	6.2	2770	5.6E-5	5.5E-6	3.2E-6	0.0	6.5E-5	8.1E-6	3.7E-6	3.5E-6
F 22	6.6	2980	2.1E-4	7.2E-6	3.6E-5	0.0	2.5E-4	4.6E-5	3.7E-5	3.7E-5
F 30	6.8	2890	1.4E-4	6.8E-7	4.0E-5	0.0	1.8E-4	4.5E-5	4.1E-5	4.1E-5
G 15	8.7	3230	6.3E-5	5.6E-6	1.2E-4	0.0	1.9E-4	1.2E-4	1.2E-4	1.2E-4
G 20	9.2	2320	8.6E-5	4.9E-6	3.8E-4	0.0	4.7E-4	3.9E-4	3.8E-4	3.8E-4
H 11	9.4	1960	4.0E-5	1.9E-6	3.8E-5	0.0	8.0E-5	4.0E-5	3.8E-5	3.9E-5
I 09	5.9	2700	2.6E-5	1.5E-5	2.8E-3	0.0	2.9E-3	2.8E-3	2.8E-3	2.8E-3
I 18	7.8	1670	3.3E-5	2.4E-5	3.4E-4	1.4E-4	5.4E-4	5.0E-4	4.8E-4	4.8E-4
J 15	7.9	1550	5.7E-6	1.9E-5	2.4E-4	1.2E-4	3.8E-4	3.8E-4	3.5E-4	3.5E-4
J 16	8.9	2570	2.6E-6	1.7E-5	3.6E-4	1.1E-4	5.0E-4	5.0E-4	4.8E-4	4.8E-4
K 18	9.8	1280	1.8E-5	0.0	1.4E-4	5.7E-4	7.2E-4	7.1E-4	7.1E-4	7.1E-4
AVERAGES										
SPREADER, NO REINJ FROM D.C.			1.8E-4	5.1E-6	1.0E-4	0.0	2.8E-4	1.0E-4	1.0E-4	1.0E-4
MASS FIRED OVERFEED			1.9E-5	4.5E-5	5.6E-4	1.4E-4	7.6E-4	7.3E-4	7.0E-4	7.0E-4
HIGH			2.1E-4	2.4E-4	2.8E-3	5.7E-4	2.9E-3	2.8E-3	2.8E-3	2.8E-3
LOW			2.6E-6	6.8E-7	3.2E-6	1.1E-4	6.5E-5	8.1E-6	1.7E-6	3.5E-6

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

G/KG FUEL

INDIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	1.5E-5	6.9E-6	1.2E-6	2.2E-5	4.6E-5	1.0E-5	2.4E-5	2.4E-5
B 31	6.0	2670	3.1E-5	3.3E-6	1.3E-6	2.3E-5	5.8E-5	2.9E-5	2.5E-5	2.4E-5
B 33	6.1	2130	1.5E-5	3.2E-6	6.6E-7	3.5E-3	3.5E-3	3.5E-3	3.5E-3	3.5E-3
C 44	8.9	4380	1.5E-5	4.0E-6	1.3E-7	0.0	1.9E-5	4.4E-6	2.7E-7	1.6E-7
C 45	8.3	4360	7.1E-6	3.1E-6	1.3E-7	0.0	1.0E-5	3.1E-6	2.0E-7	1.5E-7
C 46	9.0	3230	9.1E-6	5.0E-6	2.0E-7	0.0	1.4E-5	4.7E-6	3.0E-7	2.2E-7
AVERAGE			1.5E-5	4.2E-6	6.1E-7	5.9E-4	6.1E-4	5.9E-4	5.9E-4	5.9E-4
HIGH			3.1E-5	6.9E-6	1.3E-6	3.5E-3	3.5E-3	3.5E-3	3.5E-3	3.5E-3
LOW			7.1E-6	3.1E-6	1.3E-7	2.2E-5	1.0E-5	3.1E-6	2.0E-7	1.5E-7

• STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR •

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	2.4E-6	1.9E-5	0.0	0.0	2.1E-5	1.0E-5	1.5E-7	3.2E-7
E 16	8.3	2760	3.8E-6	1.4E-6	6.9E-7	0.0	5.9E-6	1.6E-6	7.3E-7	7.1E-7
E 17	6.2	2770	3.7E-6	1.1E-6	1.2E-5	0.0	1.7E-5	1.3E-5	1.2E-5	1.2E-5
F 22	6.0	2980	2.1E-5	2.4E-6	2.9E-5	0.0	5.2E-5	3.1E-5	2.9E-5	2.9E-5
F 33	9.8	2890	3.8E-6	4.5E-7	3.5E-6	0.0	7.7E-6	3.8E-6	3.5E-6	3.5E-6
G 15	8.7	3230	7.6E-6	6.7E-6	5.8E-6	0.0	2.0E-5	1.0E-5	5.9E-6	5.9E-6
G 23	9.2	2320	6.9E-6	3.9E-6	1.3E-5	0.0	2.3E-5	1.5E-5	1.3E-5	1.3E-5
H 11	9.4	1980	4.0E-6	3.0E-7	8.5E-6	0.0	1.3E-5	8.8E-6	8.5E-6	8.5E-6
I 09	5.9	2730	4.2E-6	6.0E-6	4.7E-4	0.0	4.8E-4	4.7E-4	4.7E-4	4.7E-4
I 18	7.8	1670	1.3E-6	1.2E-5	1.7E-5	1.4E-4	1.7E-4	1.7E-4	1.6E-4	1.6E-4
J 15	7.9	1550	1.4E-7	1.2E-5	1.4E-5	4.7E-6	3.1E-5	3.1E-5	1.9E-5	1.9E-5
J 16	8.9	2570	4.0E-8	1.1E-5	2.3E-5	4.6E-6	3.9E-5	3.9E-5	2.7E-5	2.8E-5
K 18	9.8	1280	4.9E-7	0.0	9.1E-6	3.4E-5	4.4E-5	4.3E-5	4.3E-5	4.3E-5
AVERAGES										
SPREADER, NO REINJ FROM D.C.			7.7E-6	2.7E-6	1.1E-5	0.0	2.1E-5	1.2E-5	1.1E-5	1.1E-5
MASS FIRED OVERFEED			1.8E-6	8.6E-6	7.7E-5	2.7E-5	1.1E-4	1.1E-4	1.0E-4	1.0E-4
HIGH			2.1E-5	1.9E-5	4.7E-4	1.4E-4	4.8E-4	4.7E-4	4.7E-4	4.7E-4
LOW			4.0E-8	3.0E-7	6.9E-7	4.6E-6	5.9E-6	1.6E-6	1.5E-7	3.2E-7

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

G/KG FUEL

TIN

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS - G/KG FUEL: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210					1.4E-5			
A 35	6.0	3140					1.1E-5			
B 33	6.0	2710	7.7E-5	5.3E-4	1.9E-4	4.5E-5	8.4E-4	6.4E-4	2.4E-4	2.3E-4
B 31	6.0	2670	1.5E-5	3.2E-4	1.9E-4	4.6E-5	5.7E-4	4.8E-4	2.4E-4	2.4E-4
B 33	6.1	2130	7.3E-5	5.1E-4	3.2E-4	5.0E-5	1.0E-3	7.6E-4	3.8E-4	3.8E-4
C 44	6.9	4340	1.5E-4	1.3E-4	2.6E-5	0.0	3.1E-4	1.3E-4	2.8E-5	2.7E-5
C 45	6.3	4360	1.4E-4	1.0E-4	2.6E-5	0.0	2.7E-4	1.2E-4	2.8E-5	2.7E-5
C 46	9.0	3230	1.8E-4	9.0E-5	2.4E-5	0.0	3.0E-4	1.1E-4	2.4E-5	2.4E-5
AVERAGE			8.0E-5	2.1E-4	1.0E-4	1.8E-5	4.1E-4	2.8E-4	1.2E-4	1.2E-4
HIGH			1.8E-4	5.3E-4	3.2E-4	5.0E-5	1.0E-3	7.6E-4	3.8E-4	3.8E-4
LOW			1.5E-5	9.0E-5	2.4E-5	4.5E-5	1.1E-5	1.1E-5	1.1E-5	1.1E-5

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS - G/KG FUEL: 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	4.9E-5	1.4E-3	0.0	0.0	1.5E-3	7.8E-4	1.9E-5	2.2E-5
E 16	8.3	2760	5.7E-5	1.4E-4	3.1E-6	0.0	2.0E-4	8.0E-5	4.5E-6	3.9E-6
E 17	6.2	2770	5.6E-5	1.1E-4	1.2E-5	0.0	1.8E-4	7.5E-5	1.3E-5	1.3E-5
F 22	6.0	2980	4.1E-5	7.2E-5	1.4E-4	0.0	2.6E-4	1.8E-4	1.4E-4	1.4E-4
F 33	6.6	2830	2.8E-5	6.8E-5	3.5E-5	0.0	1.3E-4	7.3E-5	3.5E-5	3.5E-5
G 15	8.7	3230	1.0E-4	3.3E-4	2.3E-4	0.0	6.7E-4	4.2E-4	2.4E-4	2.4E-4
G 20	9.2	2320	5.2E-5	7.8E-5	3.8E-4	0.0	5.1E-4	4.3E-4	3.8E-4	3.8E-4
H 11	9.4	1980	2.4E-4	3.4E-5	1.3E-4	0.0	4.0E-4	1.5E-4	1.3E-4	1.3E-4
I 09	5.9	2730	1.6E-4	2.2E-4	9.4E-4	0.0	1.3E-3	1.1E-3	9.4E-4	9.5E-4
I 18	7.8	1670	5.3E-5	4.7E-4	4.0E-4	7.1E-5	1.0E-3	7.3E-4	4.7E-4	4.7E-4
J 15	7.9	1550	8.5E-6	1.9E-4	2.8E-4	3.6E-5	5.1E-4	5.1E-4	3.2E-4	3.2E-4
J 16	8.9	2570	1.1E-6	1.7E-4	2.3E-4	3.4E-5	4.3E-4	4.3E-4	2.6E-4	2.6E-4
K 18	3.8	1280	1.3E-5	0.0	4.5E-5	2.3E-4	2.8E-4	2.7E-4	2.7E-4	2.7E-4
AVERAGES										
SPREADER,NO REINJ FROM D.C.			5.6E-5	1.3E-4	1.3E-4	0.0	3.2E-4	2.1E-4	1.4E-4	1.4E-4
MASS FIRED OVERFEED			7.4E-5	3.6E-4	2.9E-4	5.3E-5	7.7E-4	5.6E-4	3.4E-4	3.5E-4
HIGH			2.4E-4	1.4E-3	9.4E-4	2.3E-4	1.5E-3	1.1E-3	9.4E-4	9.5E-4
LOW			1.1E-6	3.4E-5	3.1E-6	3.4E-5	1.3E-4	7.3E-5	4.5E-6	3.9E-6

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

G/KG FUEL

ANTIMONY

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 10 UM + 3 UM CYCLONE	1 UM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210					1.5E-4			
A 35	6.0	3140					1.4E-4			
B 30	6.0	2710	7.7E-6	9.0E-5	5.2E-6	2.2E-5	1.2E-4	1.0E-4	2.8E-5	2.8E-5
B 31	6.0	2670	1.5E-5	1.3E-4	5.2E-6	2.3E-5	1.8E-4	1.3E-4	2.9E-5	2.8E-5
B 33	6.1	2130	1.5E-5	1.0E-4	5.3E-6	2.5E-5	1.5E-4	1.1E-4	3.1E-5	3.8E-5
C 44	8.9	4360	7.6E-5	1.0E-4	4.2E-6	3.3E-6	1.8E-4	8.6E-5	8.7E-6	7.8E-6
C 45	8.3	4340	7.1E-5	6.8E-5	2.4E-6	3.3E-6	1.4E-4	6.3E-5	6.7E-6	5.9E-6
C 46	9.0	3230	9.1E-5	3.1E-5	4.4E-6	5.0E-6	1.3E-4	4.1E-5	1.0E-5	1.0E-5
AVERAGE			3.4E-5	6.5E-5	3.3E-6	1.0E-5	1.5E-4	1.0E-4	5.1E-5	5.0E-5
HIGH			9.1E-5	1.3E-4	5.3E-6	2.5E-5	1.8E-4	1.5E-4	1.5E-4	1.5E-4
LOW			7.7E-6	3.1E-5	2.4E-6	3.3E-6	1.2E-4	4.1E-5	6.7E-6	5.9E-6

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 18.5 UM +5.9 UM CYCLONE	1.4 UM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	7.3E-5	2.4E-4	0.0	0.0	3.1E-4	1.3E-4	2.2E-6	4.7E-6
E 16	8.3	2760	5.7E-6	4.6E-5	1.9E-5	0.0	7.0E-5	4.4E-5	1.9E-5	1.9E-5
E 17	6.2	2770	1.1E-5	3.7E-5	1.7E-5	0.0	6.5E-5	3.7E-5	1.7E-5	1.7E-5
F 22	6.0	2980	6.2E-6	2.2E-5	3.1E-5	0.0	5.8E-5	4.3E-5	3.1E-5	3.1E-5
F 30	6.8	2690	4.3E-5	2.0E-5	2.5E-5	0.0	8.8E-5	3.8E-5	2.6E-5	2.6E-5
G 15	8.7	3230	6.3E-5	1.1E-4	8.4E-6	0.0	1.8E-4	7.2E-5	1.0E-5	9.1E-6
G 20	9.2	2320	8.6E-6	4.9E-5	1.3E-5	0.0	7.0E-5	4.0E-5	1.3E-5	1.3E-5
H 11	9.4	1980	1.6E-4	3.4E-5	1.9E-5	0.0	2.1E-4	4.3E-5	2.0E-5	2.2E-5
I 09	5.9	2730	5.2E-5	7.5E-4	1.0E-4	0.0	9.0E-4	5.1E-4	1.0E-4	1.1E-4
I 18	7.8	1670	3.3E-5	4.7E-5	2.8E-5	1.4E-5	1.2E-4	6.9E-5	4.3E-5	4.4E-5
J 15	7.9	1550	2.8E-6	3.1E-4	1.4E-5	1.2E-5	3.4E-4	3.4E-4	2.8E-5	3.1E-5
J 16	8.9	2570	1.3E-6	5.6E-4	2.3E-5	1.1E-5	6.0E-4	6.0E-4	3.8E-5	4.3E-5
K 18	9.8	1280	3.0E-6	0.0	1.8E-5	1.1E-4	1.4E-4	1.3E-4	1.3E-4	1.3E-4
AVERAGES										
SPREADER,NO REINJ FROM D.C.			2.3E-5	4.7E-5	1.9E-5	0.0	8.9E-5	4.6E-5	1.9E-5	1.9E-5
MASS FIRED OVERFEED			4.7E-5	2.6E-4	2.9E-5	2.2E-5	3.7E-4	2.6E-4	5.3E-5	5.5E-5
HIGH			1.6E-4	7.5E-4	1.0E-4	1.1E-4	9.0E-4	6.0E-4	1.3E-4	1.3E-4
LOW			1.3E-6	2.0E-5	8.4E-6	1.1E-5	5.8E-5	3.7E-5	2.2E-6	4.7E-6

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

G/KG FUEL

TELLURIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 10 UM + 3 UM CYCLONE	1 UM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210					8.9E-6			
A 35	6.0	3140					1.1E-5			
B 30	6.0	2710	5.4E-5	5.7E-6	2.5E-6	4.5E-5	1.1E-4	5.6E-5	4.7E-5	4.7E-5
B 31	6.0	2670	5.4E-5	1.3E-5	2.6E-6	4.6E-5	1.2E-4	6.3E-5	4.9E-5	4.9E-5
B 33	6.1	2130	5.1E-5	2.8E-5	5.3E-6	5.0E-5	1.3E-4	7.5E-5	5.6E-5	5.5E-5
C 44	8.9	4380	2.3E-5	4.7E-6	5.3E-7	6.6E-6	3.5E-5	1.3E-5	7.3E-6	7.2E-6
C 45	8.3	4360	2.1E-5	3.7E-6	5.3E-7	3.3E-5	5.9E-5	3.9E-5	3.4E-5	3.4E-5
C 46	9.0	3230	2.7E-5	2.9E-6	7.9E-7	1.0E-5	4.1E-5	1.5E-5	1.1E-5	1.1E-5
AVERAGE			2.9E-5	6.3E-6	1.5E-6	2.4E-5	6.3E-5	3.5E-5	2.8E-5	2.8E-5
HIGH			5.4E-5	2.0E-5	5.3E-6	5.0E-5	1.3E-4	7.5E-5	5.6E-5	5.5E-5
LOW			2.1E-5	2.9E-6	5.3E-7	6.6E-6	8.9E-6	8.9E-6	7.3E-6	7.2E-6

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 10.5 UM +5.9 UM CYCLONE	1.4 UM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2670	3.7E-6	2.6E-6	0.0	0.0	6.3E-6	1.5E-6	4.4E-8	9.4E-8
E 16	8.3	2760	1.1E-5	1.4E-6	3.1E-7	0.0	1.3E-5	1.4E-6	4.8E-7	3.6E-7
E 17	6.2	2770	1.1E-5	1.1E-6	1.2E-6	0.0	1.3E-5	2.2E-6	1.3E-6	1.3E-6
F 22	6.0	2980	4.1E-5	1.4E-6	5.7E-6	0.0	4.8E-5	7.8E-6	6.8E-6	5.9E-6
F 30	6.8	2890	2.8E-5	1.4E-6	3.5E-6	0.0	3.3E-5	5.1E-6	3.7E-6	3.6E-6
G 15	8.7	3230	5.8E-5	4.4E-6	4.1E-5	0.0	1.0E-4	4.5E-5	4.1E-5	4.1E-5
G 20	9.2	2320	6.9E-6	3.9E-6	6.4E-5	0.0	7.4E-5	6.6E-5	6.4E-5	6.4E-5
H 11	9.4	1980	4.8E-6	2.2E-7	8.5E-6	0.0	1.4E-5	8.7E-6	8.5E-6	8.5E-6
I 09	5.9	2700	2.1E-5	3.0E-6	9.4E-4	0.0	1.0E-3	9.4E-4	9.4E-4	9.4E-4
I 18	7.8	1670	3.3E-6	4.7E-6	1.1E-4	7.1E-5	1.9E-4	1.9E-4	1.8E-4	1.8E-4
J 15	7.9	1550	5.7E-7	3.1E-6	9.4E-5	3.6E-5	1.3E-4	1.3E-4	1.3E-4	1.3E-4
J 16	8.9	2570	6.6E-7	2.2E-6	1.4E-4	3.4E-5	1.7E-4	1.7E-4	1.7E-4	1.7E-4
K 18	9.8	1280	3.0E-6	0.0	4.5E-5	2.3E-4	2.8E-4	2.7E-4	2.7E-4	2.7E-4
AVERAGES										
SPREADER, NO REINJ FROM D.C.			2.5E-5	2.3E-6	1.9E-5	0.0	4.6E-5	2.1E-5	1.9E-5	1.9E-5
MASS FIRED OVERFEED			5.3E-6	2.3E-6	1.9E-4	5.3E-5	2.5E-4	2.5E-4	2.4E-4	2.4E-4
HIGH			5.8E-5	4.7E-6	9.4E-4	2.3E-4	1.0E-3	9.4E-4	9.4E-4	9.4E-4
LOW			5.7E-7	2.2E-7	3.1E-7	3.4E-5	6.3E-6	1.4E-6	4.4E-8	9.4E-8

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

G/KG FUEL

IODINE

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 10 UM + 3 UM CYCLONE	1 UM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	1.9E-5	1.6E-6	1.2E-6	1.1E-5	2.9E-5	1.5E-5	1.2E-5	1.2E-5
B 31	6.6	2670	1.5E-5	3.9E-6	1.3E-6	1.1E-5	3.2E-5	1.7E-5	1.3E-5	1.3E-5
B 33	6.1	2190	7.3E-6	1.3E-6	1.3E-6	1.2E-5	2.2E-5	1.5E-5	1.4E-5	1.4E-5
C 44	8.9	4380	4.6E-6	3.8E-7	5.3E-7	3.3E-6	8.8E-6	4.5E-6	3.9E-6	3.8E-6
C 45	8.3	4360	4.2E-6	4.9E-7	5.3E-7	3.3E-6	8.6E-6	4.6E-6	3.9E-6	3.9E-6
C 46	9.0	3230	1.8E-5	3.8E-7	4.0E-7	5.0E-6	2.4E-5	7.3E-6	5.5E-6	5.4E-6
AVERAGE			1.1E-5	1.3E-6	8.9E-7	7.8E-6	2.1E-5	1.1E-5	8.8E-6	8.7E-6
HIGH			1.8E-5	3.9E-6	1.3E-6	1.2E-5	3.2E-5	1.7E-5	1.4E-5	1.4E-5
LOW			4.2E-6	3.8E-7	4.0E-7	3.3E-6	8.6E-6	4.5E-6	3.9E-6	3.8E-6

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 10.5 UM +5.9 UM CYCLONE	1.4 UM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	13.2	2070	2.4E-6	1.2E-6	0.0	0.0	3.6E-6	7.1E-7	2.5E-8	5.4E-8
E 16	8.3	2760	3.8E-5	4.6E-6	0.0	0.0	4.3E-5	3.7E-6	3.0E-7	1.7E-7
E 17	6.2	2770	3.7E-5	3.7E-6	8.1E-7	0.0	4.2E-5	4.0E-6	1.1E-6	1.0E-6
F 22	6.0	2980	1.4E-4	4.8E-6	4.3E-6	0.0	1.5E-4	1.1E-5	5.3E-6	4.9E-6
F 30	6.8	2890	9.5E-5	4.5E-6	5.8E-6	0.0	1.0E-4	1.1E-5	6.4E-6	6.2E-6
G 19	8.7	3230	2.5E-5	1.1E-8	1.7E-5	0.0	4.3E-5	1.8E-5	1.8E-5	1.8E-5
G 20	9.2	2320	3.4E-5	1.0E-8	1.9E-5	0.0	5.3E-5	2.0E-5	1.9E-5	1.9E-5
H 11	9.4	1980	8.1E-8	7.5E-7	4.2E-6	0.0	5.1E-6	4.6E-6	4.2E-6	4.2E-6
I 09	5.9	2700	0.0	1.5E-6	0.0	0.0	1.5E-6	8.2E-7	1.0E-8	2.2E-8
I 18	7.8	1670	2.0E-5	3.5E-6	5.7E-5	3.6E-5	1.2E-4	9.5E-5	9.2E-5	9.3E-5
J 15	7.9	1550	5.7E-7	1.2E-6	4.7E-5	3.6E-5	8.4E-5	8.4E-5	8.3E-5	8.3E-5
J 16	8.9	2570	2.6E-7	1.1E-6	9.1E-5	3.4E-5	1.3E-4	1.3E-4	1.3E-4	1.3E-4
K 18	9.8	1280	1.5E-6	0.0	1.8E-5	1.1E-4	1.3E-4	1.3E-4	1.3E-4	1.3E-4
AVERAGES										
SPREADER,NO REINJ FROM D.C.			6.1E-5	2.9E-6	7.9E-6	0.0	7.2E-5	1.1E-5	8.3E-6	8.2E-6
MASS FIRED OVERFEED			3.5E-6	1.3E-6	3.1E-5	3.1E-5	6.7E-5	6.4E-5	6.2E-5	6.3E-5
HIGH			1.4E-4	4.8E-6	9.1E-5	1.1E-4	1.5E-4	1.3E-4	1.3E-4	1.3E-4
LOW			8.1E-8	1.0E-8	8.1E-7	3.4E-5	1.5E-6	7.1E-7	1.0E-8	2.2E-8

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

G/KG FUEL

CESIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 10 UM + 3 UM CYCLONE	1 UM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 33	6.0	2710	5.4E-5	5.6E-5	6.2E-6	1.1E-4	2.3E-4	1.6E-4	1.2E-4	1.2E-4
B 31	6.0	2670	7.7E-5	1.2E-4	4.3E-6	1.1E-4	3.1E-4	2.1E-4	1.2E-4	1.2E-4
B 33	6.1	2130	5.1E-5	1.7E-4	6.6E-6	1.2E-4	3.5E-4	2.6E-4	1.3E-4	1.3E-4
C 44	8.9	4340	1.5E-3	3.7E-5	2.6E-7	0.0	1.6E-3	1.6E-4	1.1E-5	2.6E-6
C 45	8.3	4360	1.4E-3	3.1E-5	2.6E-7	0.0	1.4E-3	1.5E-4	1.0E-5	2.4E-6
C 46	9.0	3230	9.1E-4	5.6E-5	7.9E-8	0.0	1.0E-3	1.2E-4	6.9E-6	1.5E-6
AVERAGE			6.7E-4	7.8E-5	3.0E-6	5.8E-5	8.1E-4	1.8E-4	6.7E-5	6.3E-5
HIGH			1.5E-3	1.7E-4	6.6E-6	1.2E-4	1.6E-3	2.6E-4	1.3E-4	1.3E-4
LOW			5.1E-5	3.1E-5	7.9E-8	1.1E-4	2.3E-4	1.2E-4	6.9E-6	1.5E-6

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 18.5 UM +5.9 UM CYCLONE	1.4 UM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	13.2	2070	3.7E-5	1.0E-5	0.0	0.0	4.7E-5	6.6E-6	3.3E-7	7.0E-7
E 16	8.3	2760	5.7E-5	2.3E-5	6.9E-8	0.0	8.0E-5	1.4E-5	6.3E-7	3.9E-7
E 17	6.2	2770	1.9E-5	7.4E-5	1.6E-7	0.0	9.3E-5	4.1E-5	8.1E-7	5.3E-7
F 22	6.0	2980	2.7E-5	2.4E-6	2.9E-7	0.0	3.0E-5	2.5E-6	4.9E-7	4.0E-7
F 30	6.8	2690	6.6E-5	9.0E-7	3.5E-7	0.0	6.7E-5	3.0E-6	8.1E-7	6.1E-7
G 15	8.7	3230	1.0E-4	2.2E-5	1.2E-6	0.0	1.2E-4	1.7E-5	2.8E-6	1.7E-6
G 20	9.2	2320	6.9E-5	3.9E-6	3.9E-7	0.0	7.3E-5	4.7E-6	9.0E-7	6.8E-7
H 11	9.4	1940	3.2E-5	2.6E-5	8.5E-7	0.0	5.9E-5	1.6E-5	1.3E-6	1.7E-6
I 09	5.9	2700	4.2E-5	6.0E-5	3.6E-5	0.0	1.4E-4	7.2E-5	3.8E-5	3.9E-5
I 18	7.8	1670	2.7E-5	5.9E-5	5.7E-6	5.7E-6	1.0E-4	4.5E-5	1.2E-5	1.3E-5
J 15	7.9	1550	2.3E-6	4.9E-5	4.2E-6	4.7E-6	6.1E-5	6.1E-5	9.3E-6	1.0E-5
J 16	8.9	2570	5.3E-6	4.5E-5	4.1E-6	4.6E-6	5.9E-5	5.9E-5	9.0E-6	9.4E-6
K 18	9.8	1260	4.9E-7	0.0	3.2E-6	3.4E-5	3.8E-5	3.8E-5	3.7E-5	3.7E-5
AVERAGES										
SPREADER,NO REINJ FROM D.C.			5.7E-5	2.1E-5	4.0E-7	0.0	7.8E-5	1.4E-5	9.5E-7	7.1E-7
MASS FIRED OVERFEED			2.1E-5	3.6E-5	7.9E-6	7.1E-6	7.1E-5	4.2E-5	1.5E-5	1.6E-5
HIGH			1.0E-4	7.4E-5	3.8E-5	3.4E-5	1.4E-4	7.2E-5	3.8E-5	3.9E-5
LOW			4.9E-7	9.0E-7	6.9E-8	4.6E-6	3.0E-5	2.5E-6	3.3E-7	3.9E-7

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

G/KG FUEL

BARIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J BARIUM	*- - - E M I S S I O N S - G/KG FUEL * 10 UM + 3 UM CYCLONE	1 UM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210	0.0					2.5E-3			
A 35	6.0	3140	0.0					3.0E-3			
B 30	6.0	2710	0.0	4.6E-3	2.5E-3	1.9E-5	4.5E-5	7.1E-3	2.3E-3	1.1E-4	7.4E-5
B 31	6.0	2670	0.0	7.7E-3	5.6E-3	1.9E-5	4.6E-5	1.3E-2	4.9E-3	1.6E-4	8.5E-5
B 33	6.1	2130	0.0	1.5E-2	7.6E-3	1.9E-5	5.0E-5	2.2E-2	7.1E-3	2.2E-4	1.0E-4
C 44	8.9	4380	0.0	1.5E+0	8.3E-3	5.3E-5	0.0	1.5E+0	1.4E-1	1.1E-2	2.4E-3
C 45	8.3	4360	0.0	7.1E-1	7.2E-3	2.6E-5	0.0	7.1E-1	6.7E-2	5.0E-3	1.1E-3
C 46	9.0	3230	0.0	9.1E-2	6.6E-3	2.4E-5	0.0	1.0E-1	1.3E-2	7.1E-4	1.7E-4
AVERAGE				2.9E-1	4.7E-3	2.0E-5	1.8E-5	3.0E-1	3.0E-2	2.0E-3	1.2E-3
HIGH				1.5E+0	8.3E-3	5.3E-5	5.0E-5	1.5E+0	1.4E-1	1.1E-2	3.0E-3
LOW				4.6E-3	2.5E-3	1.9E-5	4.5E-5	2.5E-3	2.3E-3	1.1E-4	7.4E-5

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	INPUT NG/J BARIUM	*- - - E M I S S I O N S - G/KG FUEL * 18.5 UM +5.9 UM CYCLONE	1.4 UM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	13.2	2070	4.3	2.4E-4	6.6E-4	0.0	0.0	9.1E-4	3.7E-4	6.3E-6	1.4E-5
E 16	4.3	2760	2.7	3.8E-3	2.3E-3	3.5E-5	0.0	6.1E-3	1.4E-3	7.7E-5	5.9E-5
E 17	6.2	2770	3.5	3.7E-3	7.4E-3	4.1E-7	0.0	1.1E-2	4.2E-3	7.8E-5	4.5E-5
F 22	6.0	2980	2.4	6.8E-3	2.4E-4	1.4E-4	0.0	7.2E-3	4.9E-4	1.9E-4	1.7E-4
F 30	6.8	2890	4.4	9.5E-3	2.3E-4	5.8E-5	0.0	1.0E-2	4.8E-4	1.3E-4	1.0E-4
G 15	8.7	3230	6.6	1.3E-2	1.1E-3	5.8E-5	0.0	1.4E-2	1.1E-3	1.5E-4	1.1E-4
G 20	9.2	2320	2.5	3.4E-3	7.8E-4	1.3E-4	0.0	4.3E-3	6.7E-4	1.6E-4	1.4E-4
H 11	9.4	1980	1.2	3.2E-3	7.5E-5	1.3E-4	0.0	3.4E-3	2.7E-4	1.5E-4	1.8E-4
I 09	5.9	2700	1.0	3.1E-3	1.5E-4	4.7E-4	0.0	3.8E-3	6.5E-4	4.9E-4	5.2E-4
I 18	7.8	1670	5.4	4.0E-2	4.7E-4	2.3E-4	5.7E-5	4.1E-2	1.8E-3	5.7E-4	8.9E-4
J 15	7.9	1550	4.2	1.7E-3	1.2E-2	2.8E-4	4.7E-5	1.4E-2	1.4E-3	4.3E-4	5.4E-4
J 16	8.9	2570	1.8	7.9E-4	3.4E-4	4.1E-4	4.6E-5	1.6E-3	1.6E-3	4.6E-4	4.7E-4
K 18	9.8	1280	0.0	4.9E-4	0.0	2.3E-5	1.1E-4	6.3E-4	1.5E-4	1.4E-4	1.4E-4
AVERAGES											
SPREADER, NO REINJ FROM D.C.				6.6E-3	2.0E-3	7.0E-5	0.0	8.7E-3	1.4E-3	1.3E-4	1.0E-4
MASS FIRED OVERFEED				7.1E-3	2.0E-3	2.2E-4	3.8E-5	9.3E-3	2.7E-3	3.2E-4	3.9E-4
HIGH				4.0E-2	1.2E-2	4.7E-4	1.1E-4	4.1E-2	1.4E-2	5.7E-4	8.9E-4
LOW				2.4E-4	7.5E-5	4.1E-7	4.6E-5	6.3E-4	1.5E-4	6.3E-6	1.4E-5

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

G/KG FUEL

LANTHANUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	1.5E-4	2.5E-5	6.2E-7	2.2E-5	2.0E-4	5.5E-5	2.4E-5	2.3E-5
B 31	6.0	2670	3.8E-4	1.3E-4	6.5E-7	2.3E-5	5.4E-4	1.5E-4	2.7E-5	2.4E-5
B 33	6.1	2130	7.3E-4	2.3E-4	6.6E-7	2.5E-5	1.0E-3	2.6E-4	3.2E-5	2.7E-5
C 44	8.9	4380	3.8E-3	8.6E-5	1.3E-7	0.0	3.9E-3	4.0E-4	2.7E-5	6.0E-6
C 45	8.3	4360	3.5E-3	8.2E-5	1.3E-7	0.0	3.6E-3	3.7E-4	2.5E-5	5.5E-6
C 46	9.0	3230	2.7E-3	1.3E-4	1.6E-7	0.0	2.9E-3	3.4E-4	2.0E-5	4.5E-6
AVERAGE			1.9E-3	1.1E-4	3.9E-7	1.2E-5	2.0E-3	2.6E-4	2.6E-5	1.5E-5
HIGH			3.8E-3	2.3E-4	6.6E-7	2.5E-5	3.9E-3	4.0E-4	3.2E-5	2.7E-5
LOW			1.5E-4	2.5E-5	1.3E-7	2.2E-5	2.0E-4	5.5E-5	2.0E-5	4.5E-6

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 10.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	1.2E-5	2.8E-5	0.0	0.0	4.0E-5	1.6E-5	2.8E-7	6.0E-7
E 16	8.3	2760	5.7E-4	2.1E-4	3.5E-7	0.0	7.8E-4	1.3E-4	5.8E-6	3.5E-6
E 17	6.2	2770	1.7E-4	1.8E-4	3.2E-7	0.0	3.5E-4	1.1E-4	2.8E-6	1.7E-6
F 22	6.0	2980	6.2E-4	1.4E-5	2.1E-6	0.0	6.3E-4	3.0E-5	6.6E-6	4.7E-6
F 30	6.8	2890	4.3E-4	2.0E-5	2.3E-6	0.0	4.5E-4	2.7E-5	5.4E-6	4.1E-6
G 15	6.7	3230	1.0E-3	8.9E-5	1.2E-6	0.0	1.1E-3	8.2E-5	8.9E-6	5.6E-6
G 20	9.2	2320	5.2E-4	8.8E-5	1.3E-5	0.0	6.2E-4	7.8E-5	1.7E-5	1.5E-5
H 11	9.4	1980	2.4E-4	1.1E-5	2.1E-6	0.0	2.6E-4	1.6E-5	3.9E-6	5.9E-6
I 09	5.9	2700	4.2E-4	1.5E-5	9.4E-5	0.0	5.3E-4	1.2E-4	1.0E-4	1.8E-4
I 10	7.8	1670	5.3E-4	1.2E-5	1.1E-5	1.4E-5	5.7E-4	4.9E-5	2.9E-5	3.4E-5
J 15	7.9	1550	5.7E-5	4.9E-5	9.4E-6	3.0E-5	1.4E-4	1.4E-4	4.0E-5	4.1E-5
J 16	8.9	2570	2.6E-5	1.7E-5	1.4E-5	1.1E-5	6.8E-5	6.8E-5	2.5E-5	2.6E-5
K 18	9.8	1280	4.9E-5	0.0	1.4E-5	1.1E-4	1.8E-4	1.3E-4	1.3E-4	1.3E-4
AVERAGES										
SPREADER,NO REINJ FROM D.C.			5.5E-4	1.0E-4	3.2E-6	0.0	6.5E-4	7.6E-5	7.7E-6	5.8E-6
MASS FIRED OVERFEED			1.9E-4	1.9E-5	2.1E-5	2.4E-5	2.5E-4	7.7E-5	4.6E-5	4.8E-5
HIGH			1.0E-3	2.1E-4	9.4E-5	1.1E-4	1.1E-3	1.4E-4	1.3E-4	1.3E-4
LOW			1.2E-5	1.1E-5	3.2E-7	1.1E-5	4.0E-5	1.6E-5	2.8E-7	6.0E-7

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

G/KG FUEL

CERIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	3.8E-4	1.7E-4	1.2E-6	2.2E-5	5.7E-4	1.8E-4	2.7E-5	2.4E-5
B 31	6.0	2670	5.4E-4	2.8E-4	1.3E-6	2.3E-5	8.4E-4	2.8E-4	3.0E-5	2.6E-5
B 33	6.1	2130	7.3E-4	3.9E-4	1.3E-6	2.5E-5	1.1E-3	3.8E-4	3.4E-5	2.8E-5
C 44	8.9	4380	5.3E-3	1.6E-4	5.3E-7	0.0	5.5E-3	5.9E-4	3.9E-5	8.8E-6
C 45	8.3	4360	4.9E-3	7.1E-5	2.6E-7	0.0	5.0E-3	4.9E-4	3.5E-5	7.8E-6
C 46	9.0	3230	6.4E-3	1.4E-4	4.0E-7	0.0	6.5E-3	6.7E-4	4.6E-5	1.0E-5
AVERAGE			3.1E-3	2.0E-4	8.4E-7	1.2E-5	3.3E-3	4.3E-4	3.5E-5	1.7E-5
HIGH			6.4E-3	3.9E-4	1.3E-6	2.5E-5	6.5E-3	6.7E-4	4.6E-5	2.8E-5
LOW			3.8E-4	7.1E-5	2.6E-7	2.2E-5	5.7E-4	1.8E-4	2.7E-5	7.8E-6

• STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR •

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	8.6E-5	2.8E-5	0.0	0.0	1.1E-4	1.8E-5	7.9E-7	1.7E-6
E 16	3.3	2760	5.7E-4	2.3E-4	2.4E-7	0.0	8.0E-4	1.4E-4	5.9E-6	3.5E-6
E 17	6.2	2770	5.6E-4	1.1E-3	1.6E-7	0.0	1.7E-3	6.3E-4	1.2E-5	6.8E-6
F 22	6.0	2980	2.1E-3	2.4E-5	7.1E-7	0.0	2.1E-3	8.0E-5	1.5E-5	9.0E-6
F 30	6.8	2890	4.7E-4	2.3E-5	1.2E-6	0.0	5.0E-4	2.9E-5	4.6E-6	3.1E-6
G 15	8.7	3230	2.5E-3	2.2E-4	1.2E-6	0.0	2.7E-3	2.0E-4	2.0E-5	1.2E-5
G 20	9.2	2320	1.4E-3	2.0E-4	6.5E-7	0.0	1.6E-3	1.5E-4	1.2E-5	6.9E-6
H 11	9.4	1980	7.3E-4	2.2E-5	8.5E-7	0.0	7.5E-4	3.6E-5	6.1E-6	1.2E-5
I 09	5.9	2700	1.6E-3	1.5E-4	2.4E-5	0.0	1.7E-3	1.6E-4	3.6E-5	4.9E-5
I 18	7.8	1670	5.3E-3	4.7E-5	1.1E-5	5.7E-6	5.4E-3	2.1E-4	5.5E-5	1.0E-4
J 15	7.9	1550	2.3E-4	1.2E-4	3.8E-6	4.7E-6	3.6E-4	3.6E-4	1.1E-5	1.4E-5
J 16	8.9	2570	1.1E-4	4.5E-5	1.4E-5	4.6E-6	1.7E-4	1.7E-4	1.9E-5	2.1E-5
K 18	9.8	1280	1.0E-4	0.0	9.1E-6	3.4E-5	1.4E-4	4.7E-5	4.4E-5	4.5E-5
AVERAGES										
SPREADER,NO REINJ FROM D.C.			1.3E-3	3.0E-4	6.8E-7	0.0	1.6E-3	2.1E-4	1.2E-5	6.9E-6
MASS FIRED OVERFEED			1.2E-3	5.9E-5	8.9E-6	7.1E-6	1.2E-3	1.4E-4	2.4E-5	3.4E-5
HIGH			5.3E-3	1.1E-3	2.4E-5	3.4E-5	5.4E-3	6.3E-4	5.5E-5	1.0E-4
LOW			8.6E-5	2.2E-5	1.6E-7	4.6E-6	1.1E-4	1.8E-5	7.9E-7	1.7E-6

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

G/KG FUEL

PRASEODYMIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	1.5E-5	1.2E-5	1.2E-6	2.2E-5	5.1E-5	3.4E-5	2.4E-5	2.4E-5
B 31	6.0	2670	1.5E-4	2.0E-5	1.3E-6	2.3E-5	2.0E-4	5.3E-5	2.6E-5	2.5E-5
B 33	6.1	2130	1.5E-4	5.7E-5	1.3E-6	2.5E-5	2.3E-4	8.2E-5	2.8E-5	2.7E-5
C 44	8.9	4380	5.3E-4	1.7E-5	1.8E-7	0.0	5.5E-4	6.0E-5	4.0E-6	1.0E-6
C 45	8.3	4360	4.9E-4	1.5E-5	1.9E-7	0.0	5.1E-4	5.4E-5	3.7E-6	9.5E-7
C 46	9.0	3230	4.6E-4	2.8E-5	2.0E-7	0.0	4.9E-4	6.1E-5	3.6E-6	9.3E-7
AVERAGE			3.0E-4	2.5E-5	7.4E-7	1.2E-5	3.4E-4	5.7E-5	1.5E-5	1.3E-5
HIGH			5.3E-4	5.7E-5	1.3E-6	2.5E-5	5.5E-4	8.2E-5	2.8E-5	2.7E-5
LOW			1.5E-5	1.2E-5	1.8E-7	2.2E-5	5.1E-5	3.4E-5	3.6E-6	9.3E-7

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	4.9E-5	1.0E-5	0.0	0.0	5.9E-5	7.0E-6	4.1E-7	8.8E-7
E 16	8.3	2760	1.7E-4	1.4E-4	6.9E-7	0.0	3.1E-4	8.2E-5	2.9E-6	1.9E-6
E 17	8.2	2770	5.6E-5	1.1E-4	8.1E-7	0.0	1.7E-4	6.4E-5	2.0E-6	1.5E-6
F 22	6.0	2980	4.1E-4	7.2E-6	2.9E-6	0.0	4.2E-4	2.0E-5	5.8E-6	4.5E-6
F 30	6.8	2890	1.4E-4	6.8E-6	1.7E-6	0.0	1.5E-4	1.0E-5	2.8E-6	2.3E-6
G 15	8.7	3230	2.5E-4	2.2E-5	1.2E-6	0.0	2.8E-4	2.1E-5	3.1E-6	2.3E-6
G 20	9.2	2320	3.4E-4	2.0E-5	6.4E-6	0.0	3.7E-4	2.8E-5	8.9E-6	7.8E-6
H 11	9.4	1980	8.1E-5	3.4E-6	3.4E-6	0.0	8.7E-5	7.8E-6	4.0E-6	4.6E-6
I 09	5.9	2700	1.0E-4	6.0E-6	9.4E-5	0.0	2.0E-4	1.0E-4	9.5E-5	1.0E-4
I 18	7.8	1670	3.3E-4	4.7E-6	1.1E-5	1.4E-5	3.6E-4	3.9E-5	2.8E-5	3.1E-5
J 15	7.9	1550	2.3E-5	1.2E-5	9.4E-6	1.2E-5	5.6E-5	5.6E-5	2.2E-5	2.2E-5
J 16	8.9	2570	2.6E-5	4.5E-6	1.4E-5	1.1E-5	5.6E-5	5.6E-5	2.5E-5	2.6E-5
K 18	9.8	1280	1.0E-5	0.0	1.4E-5	1.1E-4	1.4E-4	1.3E-4	1.3E-4	1.3E-4
AVERAGES										
SPREADER,NO REINJ FROM D.C.			2.3E-4	5.1E-5	2.3E-6	0.0	2.8E-4	3.7E-5	4.2E-6	3.4E-6
MASS FIRED OVERFEED			8.9E-5	5.8E-6	2.1E-5	2.2E-5	1.4E-4	5.6E-5	4.3E-5	4.4E-5
HIGH			4.1E-4	1.4E-4	9.4E-5	1.1E-4	4.2E-4	1.3E-4	1.3E-4	1.3E-4
LOW			1.0E-5	3.4E-6	6.9E-7	1.1E-5	5.6E-5	7.0E-6	4.1E-7	8.8E-7

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

G/KG FUEL

NEODYMIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 33	6.0	2710	7.7E-5	4.9E-5	2.5E-6	4.5E-5	1.7E-4	9.1E-5	4.8E-5	4.7E-5
B 34	6.0	2670	4.6E-4	1.1E-4	2.6E-6	4.6E-5	6.2E-4	1.7E-4	5.3E-5	4.9E-5
B 35	6.1	2130	4.4E-4	2.1E-4	2.6E-6	5.0E-5	7.0E-4	2.5E-4	5.7E-5	5.3E-5
C 44	8.9	4380	3.0E-3	5.3E-5	5.3E-7	0.0	3.1E-3	3.1E-4	2.2E-5	5.2E-6
C 45	8.3	4360	7.1E-4	4.4E-5	5.3E-7	0.0	7.5E-4	1.0E-4	5.8E-6	1.7E-6
C 46	9.0	3230	1.8E-3	8.7E-5	7.9E-7	0.0	1.9E-3	2.3E-4	1.4E-5	3.7E-6
AVERAGE			1.1E-3	9.1E-5	1.6E-6	2.3E-5	1.2E-3	1.9E-4	3.3E-5	2.7E-5
HIGH			3.0E-3	2.1E-4	2.6E-6	5.0E-5	3.1E-3	3.1E-4	5.7E-5	5.3E-5
LOW			7.7E-5	4.4E-5	5.3E-7	4.5E-5	1.7E-4	9.1E-5	5.8E-6	1.7E-6

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	1.2E-5	7.6E-5	0.0	0.0	8.8E-5	4.2E-5	6.2E-7	1.3E-6
E 16	8.3	2760	1.1E-3	2.3E-4	1.7E-6	0.0	1.4E-3	1.6E-4	1.1E-5	7.2E-6
E 17	6.2	2770	1.9E-4	5.5E-4	1.2E-6	0.0	7.4E-4	3.1E-4	6.4E-6	4.2E-6
F 22	6.0	2980	6.8E-4	2.4E-5	5.7E-6	0.0	7.1E-4	4.1E-5	1.1E-5	8.5E-6
F 30	6.8	2890	4.7E-4	2.3E-5	3.5E-6	0.0	5.0E-4	3.1E-5	6.9E-6	5.4E-6
G 15	8.7	3230	6.3E-4	3.3E-5	1.2E-5	0.0	6.8E-4	5.0E-5	1.6E-5	1.4E-5
G 20	9.2	2320	3.4E-4	7.8E-5	1.3E-5	0.0	4.3E-4	6.7E-5	1.6E-5	1.4E-5
H 11	9.4	1980	7.3E-4	3.4E-5	1.3E-5	0.0	7.7E-4	5.4E-5	1.8E-5	2.4E-5
I 09	5.9	2700	4.2E-4	3.7E-5	9.4E-4	0.0	1.4E-3	1.0E-3	9.4E-4	9.5E-4
I 18	7.8	1670	1.3E-3	2.4E-5	5.7E-5	4.3E-5	1.5E-3	1.5E-4	1.1E-4	1.2E-4
J 15	7.9	1550	5.7E-5	3.1E-5	2.8E-5	3.6E-5	1.5E-4	1.5E-4	6.4E-5	6.5E-5
J 16	8.9	2570	4.0E-5	1.7E-5	9.1E-5	3.4E-5	1.8E-4	1.8E-4	1.3E-4	1.3E-4
K 19	9.8	1280	4.9E-5	0.0	1.4E-4	5.7E-4	7.6E-4	7.1E-4	7.1E-4	7.1E-4
AVERAGES										
SPREADER,NO REINJ FROM D.C.			5.8E-4	1.6E-4	6.1E-6	0.0	7.4E-4	1.1E-4	1.1E-5	9.8E-6
MASS FIRED OVERFEED			3.8E-4	3.1E-5	1.8E-4	1.0E-4	6.9E-4	3.2E-4	2.8E-4	2.8E-4
HIGH			1.3E-3	5.5E-4	9.4E-4	5.7E-4	1.5E-3	1.0E-3	9.4E-4	9.5E-4
LOW			1.2E-5	1.7E-5	1.2E-6	3.4E-5	8.8E-5	3.1E-5	6.2E-7	1.3E-6

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

G/KG FUEL

SAMARIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	3.8E-5	1.5E-5	2.5E-6	4.5E-5	1.0E-4	6.2E-5	4.7E-5	4.7E-5
B 31	6.0	2670	1.5E-4	4.1E-5	2.6E-6	4.6E-5	2.4E-4	9.3E-5	5.0E-5	4.9E-5
B 33	6.1	2130	2.2E-4	7.6E-5	2.6E-6	5.0E-5	3.5E-4	1.3E-4	5.4E-5	5.3E-5
C 44	8.9	4380	3.8E-4	1.7E-5	5.3E-7	0.0	4.0E-4	4.7E-5	3.3E-6	1.1E-6
C 45	8.3	4360	2.1E-4	1.4E-5	5.3E-7	0.0	2.3E-4	3.0E-5	2.1E-6	8.7E-7
C 46	9.0	3230	4.6E-4	2.7E-5	4.0E-7	0.0	4.8E-4	6.1E-5	3.8E-6	1.1E-6
AVERAGE			2.4E-4	3.2E-5	1.5E-6	2.3E-5	3.0E-4	7.0E-5	2.7E-5	2.5E-5
HIGH			4.6E-4	7.6E-5	2.6E-6	5.0E-5	4.8E-4	1.3E-4	5.4E-5	5.3E-5
LOW			3.8E-5	1.4E-5	4.0E-7	4.5E-5	1.0E-4	3.0E-5	2.1E-6	8.7E-7

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 10.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	13.2	2070	3.7E-5	1.1E-5	0.0	0.0	4.8E-5	7.4E-6	3.4E-7	7.2E-7
E 16	8.3	2760	1.9E-4	6.9E-5	1.7E-6	0.0	2.6E-4	4.6E-5	3.5E-6	2.8E-6
E 17	6.2	2770	5.6E-5	5.5E-5	1.2E-6	0.0	1.1E-4	3.4E-5	2.0E-6	1.7E-6
F 22	6.0	2980	2.1E-4	7.2E-6	5.7E-6	0.0	2.2E-4	1.6E-5	7.2E-6	6.6E-6
F 30	6.8	2890	2.8E-4	1.4E-5	3.5E-6	0.0	3.0E-4	2.0E-5	5.5E-6	4.6E-6
G 15	8.7	3230	2.5E-4	2.2E-5	1.2E-5	0.0	2.9E-4	3.2E-5	1.4E-5	1.3E-5
G 20	9.2	2320	1.4E-4	2.0E-5	1.3E-5	0.0	1.7E-4	2.8E-5	1.4E-5	1.3E-5
H 11	9.4	1980	8.1E-5	3.7E-6	8.5E-6	0.0	9.3E-5	1.3E-5	9.1E-6	1.0E-5
I 04	5.9	2700	1.6E-4	6.0E-6	4.7E-4	0.0	6.3E-4	4.8E-4	4.7E-4	4.7E-4
I 16	7.8	1670	3.3E-4	1.2E-5	1.1E-4	4.3E-5	5.0E-4	1.7E-4	1.6E-4	1.6E-4
J 15	7.9	1550	1.4E-5	1.2E-5	9.4E-5	3.6E-5	1.6E-4	1.6E-4	1.3E-4	1.3E-4
J 16	8.9	2570	2.6E-5	1.1E-5	1.4E-4	3.4E-5	2.1E-4	2.1E-4	1.7E-4	1.7E-4
K 18	9.8	1280	2.0E-5	0.0	4.5E-5	2.3E-4	2.9E-4	2.7E-4	2.7E-4	2.7E-4
AVERAGES										
SPREADER,NG REINJ FROM D.C.			1.9E-4	3.1E-5	6.1E-6	0.0	2.2E-4	2.9E-5	7.6E-6	7.0E-6
MASS FIRED OVERFEED			1.0E-4	8.1E-6	1.2E-4	4.9E-5	2.8E-4	1.9E-4	1.7E-4	1.7E-4
HIGH			3.3E-4	6.9E-5	4.7E-4	2.3E-4	6.3E-4	4.8E-4	4.7E-4	4.7E-4
LOW			1.4E-5	3.7E-6	1.2E-6	3.4E-5	4.8E-5	7.4E-6	3.4E-7	7.2E-7

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

G/KG FUEL

EUROPIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	2.3E-5	4.9E-6	2.5E-6	3.3E-5	6.4E-5	4.2E-5	3.6E-5	3.6E-5
B 31	6.C	2670	3.8E-5	2.4E-5	2.6E-6	3.4E-5	1.0E-4	5.8E-5	3.8E-5	3.7E-5
B 33	6.1	2130	3.6E-5	2.8E-5	2.6E-6	3.7E-5	1.0E-4	6.4E-5	4.0E-5	4.0E-5
C 44	8.9	4380	3.8E-4	5.0E-6	5.3E-7	0.0	3.9E-4	3.8E-5	3.2E-6	1.1E-6
C 45	8.3	4360	1.4E-4	3.7E-6	5.3E-7	0.0	1.5E-4	1.6E-5	1.5E-6	7.5E-7
C 46	9.0	3230	1.8E-4	8.2E-6	4.0E-7	0.0	1.9E-4	2.3E-5	1.7E-6	6.8E-7
AVERAGE			1.3E-4	1.2E-5	1.5E-6	1.8E-5	1.7E-4	4.0E-5	2.8E-5	1.9E-5
HIGH			3.8E-4	2.8E-5	2.6E-6	3.7E-5	3.9E-4	6.4E-5	4.8E-5	4.8E-5
LOW			2.3E-5	3.7E-6	4.0E-7	3.3E-5	6.4E-5	1.6E-5	1.5E-6	6.8E-7

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SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	8.6E-6	3.3E-6	0.0	0.0	1.2E-5	2.1E-6	8.3E-8	1.8E-7
E 16	8.3	2760	1.9E-5	2.1E-5	1.7E-6	0.0	4.1E-5	1.4E-5	2.0E-6	1.9E-6
E 17	6.2	2770	1.9E-5	1.8E-5	1.2E-6	0.0	3.8E-5	1.2E-5	1.5E-6	1.4E-6
F 22	6.0	2980	6.2E-5	2.2E-6	5.7E-6	0.0	6.9E-5	8.9E-6	6.2E-6	6.0E-6
F 30	6.8	2890	4.3E-5	2.3E-6	2.3E-6	0.0	4.7E-5	4.9E-6	2.6E-6	2.5E-6
G 15	8.7	3230	6.3E-5	5.6E-6	5.8E-6	0.0	7.4E-5	1.1E-5	6.3E-6	6.1E-6
G 20	9.2	2320	5.2E-5	4.9E-6	2.5E-6	0.0	5.9E-5	6.9E-6	2.9E-6	2.8E-6
H 11	9.4	1980	4.8E-5	2.2E-6	8.5E-6	0.0	5.9E-5	1.1E-5	8.8E-6	9.2E-6
I 09	5.9	2700	1.0E-4	2.2E-6	2.8E-4	0.0	3.9E-4	2.9E-4	2.8E-4	2.8E-4
I 18	7.8	1670	2.0E-4	4.7E-6	4.0E-5	4.3E-5	2.9E-4	9.1E-5	8.4E-5	8.5E-5
J 15	7.9	1550	8.5E-6	3.1E-6	2.8E-5	3.6E-5	7.5E-5	7.5E-5	6.4E-5	6.4E-5
J 16	8.9	2570	6.6E-6	2.8E-6	4.1E-5	3.4E-5	8.5E-5	8.5E-5	7.5E-5	7.6E-5
K 18	9.8	1280	4.9E-6	0.0	4.5E-5	2.3E-4	2.8E-4	2.7E-4	2.7E-4	2.7E-4
AVERAGES										
SPREADER,NO REINJ FROM D.C.			4.3E-5	9.0E-6	3.2E-6	0.0	5.5E-5	1.0E-5	3.6E-6	3.4E-6
MASS FIRED OVERFEED			5.4E-5	2.6E-6	6.4E-5	4.9E-5	1.7E-4	1.2E-4	1.1E-4	1.1E-4
HIGH			2.0E-4	2.1E-5	2.8E-4	2.3E-4	3.9E-4	2.9E-4	2.8E-4	2.8E-4
LOW			4.9E-6	2.2E-6	1.2E-6	3.4E-5	1.2E-5	2.1E-6	8.3E-8	1.8E-7

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

G/KG FUEL

GADOLINIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS - G/KG FUEL: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	2.3E-5	7.4E-6	2.5E-6	4.5E-5	7.7E-5	5.5E-5	4.7E-5	4.7E-5
B 31	6.0	2670	7.7E-5	4.1E-5	2.6E-6	3.4E-5	1.5E-4	7.4E-5	3.8E-5	3.7E-5
B 33	6.1	2130	7.3E-5	6.7E-5	2.6E-6	5.0E-5	1.9E-4	1.1E-4	5.3E-5	5.3E-5
C 44	8.9	4380	7.6E-4	9.0E-6	1.8E-7	0.0	7.7E-4	7.4E-5	5.6E-6	1.3E-6
C 45	8.3	4360	1.4E-4	7.7E-6	1.9E-7	1.3E-5	1.6E-4	3.2E-5	1.5E-5	1.4E-5
C 46	9.0	3230	1.8E-4	1.4E-5	2.0E-7	0.0	2.0E-4	2.7E-5	1.6E-6	4.9E-7
AVERAGE			2.1E-4	2.4E-5	1.4E-6	2.4E-5	2.6E-4	6.2E-5	2.7E-5	2.5E-5
HIGH			7.6E-4	6.7E-5	2.6E-6	5.0E-5	7.7E-4	1.1E-4	5.3E-5	5.3E-5
LOW			2.3E-5	7.4E-6	1.8E-7	1.3E-5	7.7E-5	2.7E-5	1.6E-6	4.9E-7

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS - G/KG FUEL: 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	1.2E-5	1.1E-5	0.0	0.0	2.4E-5	6.7E-6	1.7E-7	3.5E-7
E 16	8.3	2760	5.7E-5	6.9E-5	1.7E-6	0.0	1.3E-4	4.1E-5	2.6E-6	2.2E-6
E 17	6.2	2770	5.6E-5	1.1E-4	1.2E-6	0.0	1.7E-4	6.4E-5	2.4E-6	1.9E-6
F 22	6.0	2980	2.1E-4	7.2E-7	5.7E-6	0.0	2.1E-4	1.3E-5	7.2E-6	6.5E-6
F 30	6.8	2830	1.4E-4	6.8E-7	3.5E-6	0.0	1.5E-4	8.4E-6	4.4E-6	4.0E-6
G 15	8.7	3230	2.5E-4	2.2E-5	5.8E-6	0.0	2.8E-4	2.6E-5	7.8E-6	6.9E-6
G 23	9.2	2320	8.6E-5	7.8E-6	6.5E-7	0.0	9.4E-5	7.7E-6	1.3E-6	1.0E-6
H 11	9.4	1990	8.1E-5	3.4E-6	8.5E-6	0.0	9.2E-5	1.3E-5	9.1E-6	1.0E-5
I 03	5.9	2700	1.6E-4	3.7E-6	4.7E-4	0.0	6.3E-4	4.8E-4	4.7E-4	4.7E-4
I 18	7.8	1670	3.3E-4	7.1E-6	5.7E-5	4.3E-5	4.4E-4	1.1E-4	1.0E-4	1.0E-4
J 15	7.9	1550	2.3E-5	4.9E-6	4.7E-5	3.6E-5	1.1E-4	1.1E-4	8.3E-5	8.3E-5
J 16	8.9	2570	2.6E-5	4.5E-6	9.1E-5	3.4E-5	1.6E-4	1.6E-4	1.3E-4	1.3E-4
K 18	9.8	1280	2.0E-5	0.0	4.5E-5	2.3E-4	2.9E-4	2.7E-4	2.7E-4	2.7E-4
AVERAGES			1.3E-4	3.5E-5	3.1E-6	0.0	1.7E-4	2.7E-5	4.3E-6	3.8E-6
SPREADER, NO REINJ FROM D.C.			9.3E-5	5.0E-6	1.0E-4	4.9E-5	2.5E-4	1.6E-4	1.5E-4	1.5E-4
MASS FIRED OVERFEED			3.3E-4	1.1E-4	4.7E-4	2.3E-4	6.3E-4	4.8E-4	4.7E-4	4.7E-4
HIGH			1.2E-5	6.8E-7	6.5E-7	3.4E-5	2.4E-5	6.7E-6	1.7E-7	3.5E-7
LOW										

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

G/KG FUEL

TERBIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	7.7E-6	1.8E-6	1.2E-6	2.2E-5	3.3E-5	2.5E-5	2.4E-5	2.4E-5
B 31	6.0	2670	7.7E-6	6.6E-6	1.3E-6	2.3E-5	3.9E-5	3.0E-5	2.4E-5	2.4E-5
B 33	6.1	2130	2.2E-5	6.3E-6	1.3E-6	2.5E-5	5.4E-5	3.3E-5	2.6E-5	2.6E-5
C 44	8.9	4380	7.6E-5	2.6E-6	1.8E-7	0.0	7.9E-5	8.9E-6	7.4E-7	3.0E-7
C 45	8.3	4360	7.1E-5	2.4E-6	1.9E-7	0.0	7.3E-5	8.2E-6	7.0E-7	2.9E-7
C 46	9.0	3230	9.1E-5	5.7E-6	2.0E-7	0.0	1.0E-4	1.2E-5	8.8E-7	3.4E-7
AVERAGE			4.6E-5	4.2E-6	7.4E-7	1.2E-5	6.3E-5	2.0E-5	1.3E-5	1.3E-5
HIGH			9.1E-5	6.6E-6	1.3E-6	2.5E-5	1.0E-4	3.3E-5	2.6E-5	2.6E-5
LOW			7.7E-6	1.8E-6	1.8E-7	2.2E-5	3.3E-5	8.2E-6	7.0E-7	2.9E-7

• STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR •

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	4.9E-6	2.1E-6	0.0	0.0	7.0E-6	1.3E-6	4.9E-8	1.0E-7
E 16	8.3	2760	1.7E-5	6.9E-6	6.9E-7	0.0	2.5E-5	5.0E-6	8.6E-7	7.9E-7
E 17	6.2	2770	1.9E-5	1.7E-5	3.2E-7	0.0	3.6E-5	1.0E-5	5.7E-7	4.7E-7
F 22	6.0	2980	2.1E-5	7.2E-7	5.7E-6	0.0	2.7E-5	6.8E-6	5.9E-6	5.8E-6
F 30	6.8	2840	4.3E-5	2.0E-6	1.2E-6	0.0	4.6E-5	3.6E-6	1.5E-6	1.3E-6
G 15	8.7	3230	2.5E-5	8.9E-7	2.9E-6	0.0	2.9E-5	4.2E-6	3.1E-6	3.0E-6
G 20	9.2	2320	1.4E-5	2.0E-6	6.5E-7	0.0	1.6E-5	2.2E-6	7.6E-7	7.1E-7
H 11	9.4	1980	8.1E-6	3.7E-7	2.1E-6	0.0	1.1E-5	2.6E-6	2.2E-6	2.2E-6
I 09	5.9	2700	2.6E-5	6.0E-7	9.4E-5	0.0	1.2E-4	1.0E-4	9.4E-5	9.4E-5
I 18	7.8	1670	5.3E-5	1.2E-6	2.3E-5	1.4E-5	9.1E-5	3.9E-5	3.7E-5	3.8E-5
J 15	7.9	1550	5.7E-6	1.2E-6	1.4E-5	1.2E-5	3.3E-5	3.3E-5	2.6E-5	2.6E-5
J 16	8.9	2570	2.6E-6	4.5E-7	2.3E-5	1.1E-5	3.7E-5	3.7E-5	3.4E-5	3.4E-5
K 18	9.8	1280	1.0E-6	0.0	1.4E-5	1.1E-4	1.3E-4	1.3E-4	1.3E-4	1.3E-4
AVERAGES										
SPREADER,NO REINJ FROM D.C.			2.3E-5	4.8E-6	1.9E-6	0.0	3.0E-5	5.3E-6	2.1E-6	2.0E-6
MASS FIRED OVERFEED			1.5E-5	8.4E-7	2.4E-5	2.2E-5	6.1E-5	4.8E-5	4.6E-5	4.6E-5
HIGH			5.3E-5	1.7E-5	9.4E-5	1.1E-4	1.3E-4	1.3E-4	1.3E-4	1.3E-4
LOW			1.0E-6	3.7E-7	3.2E-7	1.1E-5	7.0E-6	1.3E-6	4.9E-8	1.0E-7

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

G/KG FUEL

DYSPROSIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 10 UM + 3 UM CYCLONE	1 UM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	2.3E-5	9.5E-6	2.5E-6	4.5E-5	7.9E-5	5.6E-5	4.7E-5	4.7E-5
B 31	6.0	2670	1.5E-4	3.0E-5	2.6E-6	4.6E-5	2.3E-4	8.5E-5	5.0E-5	4.9E-5
B 33	6.1	2130	1.5E-4	7.3E-5	2.6E-6	5.0E-5	2.7E-4	1.2E-4	5.4E-5	5.3E-5
C 44	4.9	4380	3.6E-4	9.0E-6	5.3E-7	0.0	3.9E-4	4.1E-5	3.3E-6	1.1E-6
C 45	4.3	4360	2.1E-4	8.2E-6	5.3E-7	0.0	2.2E-4	2.5E-5	2.1E-6	6.6E-7
C 46	3.0	3230	4.6E-4	1.3E-5	4.0E-7	0.0	4.7E-4	5.0E-5	3.7E-6	1.1E-6
AVERAGE			2.3E-4	2.4E-5	1.9E-6	2.3E-5	2.8E-4	6.3E-5	2.7E-5	2.5E-5
HIGH			4.6E-4	7.3E-5	2.6E-6	5.0E-5	4.7E-4	1.2E-4	5.4E-5	5.3E-5
LOW			2.3E-5	8.2E-6	4.0E-7	4.5E-5	7.9E-5	2.5E-5	2.1E-6	6.6E-7

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 10.5 UM +5.9 UM CYCLONE	1.4 UM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	1.2E-5	9.0E-6	0.0	0.0	2.1E-5	5.3E-6	1.5E-7	3.2E-7
E 16	8.3	2760	1.9E-4	1.4E-4	1.7E-6	0.0	3.3E-4	8.3E-5	4.8E-6	3.8E-6
E 17	6.2	2770	1.7E-4	5.5E-5	1.2E-6	0.0	2.2E-4	3.7E-5	2.8E-6	2.1E-6
F 22	6.6	2980	6.2E-4	1.4E-5	5.7E-6	0.0	6.4E-4	3.3E-5	1.0E-5	8.2E-6
F 18	6.8	2890	4.7E-4	2.8E-5	5.8E-6	0.0	5.0E-4	3.2E-5	9.2E-6	7.7E-6
G 15	8.7	3230	2.5E-4	8.9E-6	5.8E-6	0.0	2.7E-4	1.9E-5	7.7E-6	6.9E-6
G 20	9.2	2320	8.6E-5	2.0E-5	6.4E-6	0.0	1.1E-4	2.0E-5	7.1E-6	6.8E-6
H 11	3.4	1980	8.1E-5	3.7E-6	8.5E-6	0.0	9.3E-5	1.3E-5	9.1E-6	1.0E-5
I 19	5.9	2700	1.6E-4	3.7E-6	4.7E-4	0.0	6.3E-4	4.8E-4	4.7E-4	4.7E-4
I 18	7.6	1670	3.3E-4	7.1E-6	5.7E-5	4.3E-5	4.4E-4	1.1E-4	1.0E-4	1.0E-4
J 15	7.9	1550	1.4E-5	4.9E-6	4.7E-5	3.6E-5	1.0E-4	1.0E-4	8.3E-5	8.3E-5
J 16	8.9	2570	6.6E-6	4.5E-6	9.1E-5	3.4E-5	1.4E-4	1.4E-4	1.3E-4	1.3E-4
K 18	9.8	1280	1.0E-5	0.0	4.5E-5	2.3E-4	2.8E-4	2.7E-4	2.7E-4	2.7E-4
AVERAGES										
SPREADER,NO REINJ FROM D.C.			3.0E-4	4.3E-5	4.4E-6	0.0	3.4E-4	3.7E-5	6.8E-6	5.8E-6
MASS FIRED OVERFEED			8.6E-5	4.7E-6	1.0E-4	4.9E-5	2.4E-4	1.6E-4	1.5E-4	1.5E-4
HIGH			6.2E-4	1.4E-4	4.7E-4	2.3E-4	6.4E-4	4.8E-4	4.7E-4	4.7E-4
LOW			6.6E-6	3.7E-6	1.2E-6	3.4E-5	2.1E-5	9.3E-6	1.5E-7	3.2E-7

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

G/KG FUEL

HOLMIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	7.7E-6	2.5E-6	1.2E-6	2.2E-5	3.4E-5	2.6E-5	2.4E-5	2.4E-5
B 31	6.0	2670	2.3E-5	4.7E-6	1.3E-6	2.3E-5	5.2E-5	3.0E-5	2.4E-5	2.4E-5
B 33	6.1	2130	4.4E-5	1.3E-5	1.3E-6	2.5E-5	8.3E-5	4.0E-5	2.7E-5	2.6E-5
C 44	8.9	4380	4.6E-5	2.9E-6	1.8E-7	0.0	4.9E-5	6.4E-6	5.2E-7	2.6E-7
C 45	8.3	4360	4.2E-5	2.2E-6	1.9E-7	0.0	4.5E-5	5.6E-6	5.0E-7	2.5E-7
C 46	9.0	3230	5.5E-5	5.3E-6	2.0E-7	0.0	6.0E-5	9.0E-6	6.2E-7	2.9E-7
AVERAGE			3.6E-5	5.0E-6	7.4E-7	1.2E-5	5.4E-5	1.9E-5	1.3E-5	1.2E-5
HIGH			5.5E-5	1.3E-5	1.3E-6	2.5E-5	8.3E-5	4.0E-5	2.7E-5	2.6E-5
LOW			7.7E-6	2.2E-6	1.8E-7	2.2E-5	3.4E-5	5.6E-6	5.0E-7	2.5E-7

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SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	8.6E-6	2.1E-6	0.0	0.0	1.1E-5	1.4E-6	7.4E-8	1.6E-7
E 16	8.3	2760	1.9E-5	2.1E-5	6.9E-7	0.0	4.0E-5	1.3E-5	1.0E-6	8.5E-7
E 17	6.2	2770	1.9E-5	1.7E-5	8.1E-7	0.0	3.6E-5	1.1E-5	1.1E-6	1.0E-6
F 22	6.0	2980	6.8E-5	2.4E-6	2.9E-6	0.0	7.4E-5	6.4E-6	3.4E-6	3.1E-6
F 30	6.8	2890	4.7E-5	2.3E-6	2.3E-6	0.0	5.2E-5	5.1E-6	2.6E-6	2.5E-6
G 15	8.7	3230	3.8E-5	2.2E-6	5.8E-6	0.0	4.6E-5	8.3E-6	6.1E-6	6.0E-6
G 23	9.2	2320	3.4E-5	2.0E-6	2.5E-6	0.0	3.9E-5	4.7E-6	2.8E-6	2.7E-6
H 11	9.4	1980	2.4E-5	1.1E-6	8.5E-6	0.0	3.4E-5	1.0E-5	8.6E-6	8.8E-6
I 09	5.9	2700	2.6E-5	1.5E-6	9.4E-5	0.0	1.2E-4	1.0E-4	9.4E-5	9.4E-5
I 18	7.8	1670	3.3E-5	1.2E-6	2.3E-5	1.4E-5	7.1E-5	3.9E-5	3.7E-5	3.7E-5
J 15	7.9	1550	5.7E-6	1.2E-6	1.4E-5	1.2E-5	3.3E-5	3.3E-5	2.6E-5	2.6E-5
J 16	8.9	2570	1.1E-6	1.1E-6	2.3E-5	1.1E-5	3.6E-5	3.6E-5	3.4E-5	3.4E-5
K 18	9.8	1280	1.0E-6	0.0	2.3E-5	1.1E-4	1.4E-4	1.4E-4	1.4E-4	1.4E-4
AVERAGES										
SPREADER,NO REINJ FROM D.C.			3.8E-5	7.7E-6	2.5E-6	0.0	4.8E-5	7.9E-6	2.8E-6	2.7E-6
MASS FIRED OVERFEED			1.4E-5	1.2E-6	2.6E-5	2.2E-5	6.4E-5	5.0E-5	4.8E-5	4.8E-5
HIGH			6.8E-5	2.1E-5	9.4E-5	1.1E-4	1.4E-4	1.4E-4	1.4E-4	1.4E-4
LOW			1.0E-6	1.1E-6	6.9E-7	1.1E-5	1.1E-5	1.4E-6	7.4E-8	1.6E-7

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

G/KG FUEL

ERBIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 10 UM + 3 UM CYCLONE	1 UM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	7.7E-5	6.0E-6	2.5E-6	4.5E-5	1.3E-4	5.8E-5	4.8E-5	4.7E-5
B 31	6.0	2670	3.1E-5	1.6E-5	2.6E-6	4.6E-5	1.0E-4	6.3E-5	4.9E-5	4.9E-5
B 33	6.1	2130	7.3E-5	2.5E-5	2.6E-6	5.0E-5	1.5E-4	7.8E-5	5.3E-5	5.3E-5
C 44	8.9	4380	7.6E-5	3.8E-6	5.3E-7	0.0	8.1E-5	1.0E-5	1.1E-6	6.5E-7
C 45	8.3	4360	7.1E-5	3.3E-6	5.3E-7	0.0	7.4E-5	9.2E-6	1.0E-6	6.4E-7
C 46	9.0	3230	9.1E-5	7.6E-6	4.0E-7	0.0	1.0E-4	1.4E-5	1.1E-6	5.5E-7
AVERAGE			7.0E-5	1.0E-5	1.5E-6	2.3E-5	1.0E-4	3.9E-5	2.5E-5	2.5E-5
HIGH			9.1E-5	2.5E-5	2.6E-6	5.0E-5	1.5E-4	7.8E-5	5.3E-5	5.3E-5
LOW			3.1E-5	3.3E-6	4.0E-7	4.5E-5	7.4E-5	9.2E-6	1.0E-6	5.5E-7

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 18.5 UM +5.9 UM CYCLONE	1.4 UM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2670	1.2E-5	3.3E-6	0.0	0.0	1.6E-5	2.2E-6	1.1E-7	2.3E-7
E 16	8.3	2760	5.7E-5	2.1E-5	1.7E-6	0.0	8.0E-5	1.5E-5	2.3E-6	2.0E-6
E 17	6.2	2770	5.6E-5	1.7E-5	1.2E-6	0.0	7.4E-5	1.2E-5	1.7E-6	1.5E-6
F 22	6.0	2950	2.1E-4	2.4E-6	5.7E-6	0.0	2.1E-4	1.4E-5	7.2E-6	6.5E-6
F 30	6.8	2890	1.4E-4	6.8E-6	3.5E-6	0.0	1.5E-4	1.2E-5	4.5E-6	4.8E-6
G 15	9.7	3230	1.0E-4	3.3E-6	5.8E-6	0.0	1.1E-4	1.1E-5	6.6E-6	6.3E-6
G 20	9.2	2320	5.2E-5	2.9E-6	6.4E-6	0.0	6.1E-5	1.0E-5	6.7E-6	6.6E-6
H 11	9.4	1940	7.3E-5	2.2E-6	8.5E-6	0.0	8.3E-5	1.2E-5	9.0E-6	1.0E-5
I 09	5.9	2730	1.0E-4	2.2E-6	4.7E-4	0.0	5.8E-4	4.7E-4	4.7E-4	4.7E-4
I 18	7.8	1670	1.3E-4	4.7E-6	5.7E-5	4.3E-5	2.4E-4	1.1E-4	1.0E-4	1.0E-4
J 15	7.9	1550	8.5E-6	1.9E-6	4.7E-5	3.6E-5	9.3E-5	9.3E-5	8.3E-5	8.3E-5
J 16	8.9	2570	4.0E-6	1.7E-6	9.1E-5	3.4E-5	1.3E-4	1.3E-4	1.3E-4	1.3E-4
K 18	9.8	1280	4.9E-6	0.0	4.5E-5	2.3E-4	2.8E-4	2.7E-4	2.7E-4	2.7E-4
AVERAGES										
SPREADER,NO REINJ FROM D.C.			1.0E-4	8.8E-6	4.1E-6	0.0	1.1E-4	1.2E-5	4.8E-6	4.5E-6
MASS FIRED OVERFEED			4.9E-5	2.3E-6	1.0E-4	4.9E-5	2.0E-4	1.6E-4	1.5E-4	1.5E-4
HIGH			2.1E-4	2.1E-5	4.7E-4	2.3E-4	5.8E-4	4.7E-4	4.7E-4	4.7E-4
LOW			4.0E-6	1.7E-6	1.2E-6	3.4E-5	1.6E-5	2.2E-6	1.1E-7	2.3E-7

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

G/KG FUEL

THULIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	7.7E-6	1.2E-6	1.2E-5	2.2E-4	2.4E-4	2.4E-4	2.4E-4	2.4E-4
B 31	6.0	2670	7.7E-6	7.9E-7	1.3E-5	2.3E-4	2.5E-4	2.4E-4	2.4E-4	2.4E-4
B 33	6.1	2130	7.3E-6	2.8E-6	1.3E-5	2.5E-4	2.7E-4	2.6E-4	2.6E-4	2.6E-4
C 44	8.9	4380	2.3E-5	8.3E-7	5.3E-7	1.3E-5	3.7E-5	1.6E-5	1.4E-5	1.4E-5
C 45	8.3	4360	2.1E-5	8.2E-7	5.3E-7	0.0	2.2E-5	3.0E-6	6.8E-7	5.6E-7
C 46	9.0	3230	9.1E-6	1.9E-6	4.0E-7	0.0	1.1E-5	2.6E-6	4.7E-7	4.1E-7
AVERAGE			1.3E-5	1.4E-6	6.7E-6	1.2E-4	1.4E-4	1.3E-4	1.3E-4	1.3E-4
HIGH			2.3E-5	2.8E-6	1.3E-5	2.5E-4	2.7E-4	2.6E-4	2.6E-4	2.6E-4
LOW			7.3E-6	7.9E-7	4.0E-7	1.3E-5	1.1E-5	2.6E-6	4.7E-7	4.1E-7

• STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR •

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	13.2	2070	1.2E-6	6.3E-7	0.0	0.0	1.9E-6	3.9E-7	1.3E-8	2.8E-8
E 16	8.3	2760	1.7E-6	2.3E-6	1.7E-6	0.0	5.7E-6	3.0E-6	1.6E-6	1.7E-6
E 17	6.2	2770	1.9E-6	1.8E-6	1.2E-6	0.0	4.9E-6	2.3E-6	1.2E-6	1.2E-6
F 22	4.0	2960	1.4E-5	4.8E-7	5.7E-6	0.0	2.0E-5	6.4E-6	5.8E-6	5.8E-6
F 30	6.8	2690	9.5E-6	2.3E-7	5.8E-6	0.0	1.5E-5	6.2E-6	5.8E-6	5.8E-6
G 15	8.7	3230	1.0E-5	2.2E-7	1.2E-5	0.0	2.2E-5	1.2E-5	1.2E-5	1.2E-5
G 20	7.2	2320	8.6E-6	7.8E-7	3.8E-6	0.0	1.3E-5	4.5E-6	3.9E-6	3.8E-6
H 11	9.4	1980	8.1E-6	3.7E-7	8.5E-6	0.0	1.7E-5	8.9E-6	8.5E-6	8.6E-6
I 09	5.9	2700	4.2E-6	3.7E-7	2.8E-4	0.0	2.9E-4	2.8E-4	2.8E-4	2.8E-4
I 18	7.8	1670	1.3E-5	2.4E-7	1.1E-4	1.4E-4	2.7E-4	2.6E-4	2.6E-4	2.6E-4
J 15	7.9	1550	1.4E-6	3.1E-7	9.4E-5	1.2E-4	2.1E-4	2.1E-4	2.1E-4	2.1E-4
J 16	8.9	2570	4.0E-7	4.5E-7	1.4E-4	1.1E-4	2.5E-4	2.5E-4	2.5E-4	2.5E-4
K 18	9.8	1280	1.8E-6	0.0	2.3E-5	1.1E-4	1.4E-4	1.4E-4	1.4E-4	1.4E-4
AVERAGES										
SPREADER,NO REINJ FROM D.C.			7.6E-6	1.0E-6	5.8E-6	0.0	1.4E-5	5.8E-6	5.8E-6	5.8E-6
MASS FIRED OVERFEED			4.2E-6	3.4E-7	9.4E-5	7.8E-5	1.7E-4	1.6E-4	1.6E-4	1.6E-4
HIGH			1.4E-5	2.3E-6	2.8E-4	1.4E-4	2.9E-4	2.8E-4	2.8E-4	2.8E-4
LOW			4.0E-7	2.2E-7	1.2E-6	1.1E-4	1.9E-6	3.9E-7	1.3E-8	2.8E-8

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

G/KG FUEL

YTTERBIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	2.3E-5	5.3E-6	2.5E-6	4.5E-5	7.5E-5	5.3E-5	4.7E-5	4.7E-5
B 31	6.0	2670	3.1E-5	3.4E-6	2.6E-6	4.6E-5	8.3E-5	5.4E-5	4.9E-5	4.9E-5
B 33	6.1	2130	7.3E-5	2.5E-5	2.6E-6	5.0E-5	1.5E-4	7.8E-5	5.3E-5	5.3E-5
C 44	8.9	4380	7.6E-5	4.8E-6	5.3E-7	0.0	8.2E-5	1.1E-5	1.1E-6	6.5E-7
C 45	8.3	4360	7.1E-5	4.1E-6	5.3E-7	0.0	7.5E-5	1.0E-5	1.1E-6	6.4E-7
C 46	9.0	3230	9.1E-5	9.5E-6	4.0E-7	0.0	1.0E-4	1.6E-5	1.1E-6	5.5E-7
AVERAGE			6.1E-5	8.7E-6	1.5E-6	2.3E-5	9.4E-5	3.7E-5	2.5E-5	2.5E-5
HIGH			9.1E-5	2.5E-5	2.6E-6	5.0E-5	1.5E-4	7.8E-5	5.3E-5	5.3E-5
LOW			2.3E-5	3.4E-6	4.0E-7	4.5E-5	7.5E-5	1.0E-5	1.1E-6	5.5E-7

• STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR •

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	13.2	2070	1.2E-5	4.3E-6	0.0	0.0	1.7E-5	2.7E-6	1.2E-7	2.5E-7
E 16	6.3	2760	5.7E-5	6.9E-6	1.7E-6	0.0	6.6E-5	7.3E-6	2.2E-6	2.0E-6
E 17	6.2	2770	5.6E-5	5.5E-6	1.2E-6	0.0	6.3E-5	6.1E-6	1.6E-6	1.5E-6
F 22	6.0	2980	6.2E-5	2.2E-6	5.7E-6	0.0	6.9E-5	8.9E-6	6.2E-6	6.0E-6
F 30	6.8	2890	1.4E-4	6.8E-6	3.5E-6	0.0	1.5E-4	1.2E-5	4.5E-6	4.0E-6
G 15	8.7	3230	6.3E-5	3.3E-6	5.8E-6	0.0	7.2E-5	1.0E-5	6.3E-6	6.1E-6
G 20	9.2	2320	5.2E-5	4.9E-6	6.4E-6	0.0	6.3E-5	1.1E-5	6.7E-6	6.6E-6
H 11	9.4	1980	4.8E-5	2.2E-6	8.5E-6	0.0	5.9E-5	1.1E-5	8.8E-6	9.2E-6
I 09	5.9	2700	4.2E-5	3.7E-6	4.7E-4	0.0	5.2E-4	4.7E-4	4.7E-4	4.7E-4
I 18	7.8	1670	1.3E-4	7.1E-6	4.0E-5	4.3E-5	2.2E-4	9.1E-5	8.3E-5	8.4E-5
J 15	7.9	1550	8.5E-6	4.9E-6	2.8E-5	3.6E-5	7.7E-5	7.7E-5	6.4E-5	6.4E-5
J 16	8.9	2570	4.0E-6	2.8E-6	4.1E-5	3.4E-5	8.2E-5	8.2E-5	7.5E-5	7.5E-5
K 18	9.8	1280	4.9E-6	0.0	4.5E-5	2.3E-4	2.8E-4	2.7E-4	2.7E-4	2.7E-4
AVERAGES										
SPREADER, NO REINJ FROM D.C.			7.2E-5	4.9E-6	4.1E-6	0.0	8.1E-5	9.1E-6	4.6E-6	4.4E-6
MASS FIRED OVERFEED			3.6E-5	3.6E-6	9.0E-5	4.9E-5	1.8E-4	1.4E-4	1.4E-4	1.4E-4
HIGH			1.4E-4	7.1E-6	4.7E-4	2.3E-4	5.2E-4	4.7E-4	4.7E-4	4.7E-4
LOW			4.0E-6	2.2E-6	1.2E-6	3.4E-5	1.7E-5	2.7E-6	1.2E-7	2.5E-7

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

G/KG FUEL

LUTETIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	7.7E-6	4.6E-7	1.2E-6	2.2E-5	3.2E-5	2.5E-5	2.4E-5	2.4E-5
B 31	6.8	2670	7.7E-6	4.7E-7	1.3E-6	2.3E-5	3.2E-5	2.5E-5	2.4E-5	2.4E-5
B 33	6.1	2130	7.3E-6	7.6E-7	1.3E-6	2.5E-5	3.4E-5	2.7E-5	2.6E-5	2.6E-5
C 44	8.9	4380	7.6E-6	2.9E-7	1.8E-7	0.0	8.1E-6	1.1E-6	2.4E-7	2.0E-7
C 45	8.3	4360	7.1E-6	4.9E-7	1.9E-7	0.0	7.7E-6	1.2E-6	2.4E-7	2.0E-7
C 46	9.0	3230	9.1E-6	5.7E-7	2.0E-7	0.0	1.0E-5	1.4E-6	2.7E-7	2.1E-7
AVERAGE			7.7E-6	5.1E-7	7.4E-7	1.2E-5	2.1E-5	1.3E-5	1.2E-5	1.2E-5
HIGH			9.1E-6	7.6E-7	1.3E-6	2.5E-5	3.4E-5	2.7E-5	2.6E-5	2.6E-5
LOW			7.1E-6	2.9E-7	1.8E-7	2.2E-5	7.7E-6	1.1E-6	2.4E-7	2.0E-7

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	1.2E-6	6.3E-7	0.0	0.0	1.9E-6	3.9E-7	1.3E-8	2.8E-8
E 16	8.3	2760	5.7E-6	2.1E-6	6.9E-7	0.0	8.5E-6	2.0E-6	7.5E-7	7.2E-7
E 17	6.2	2770	5.6E-6	1.8E-6	3.2E-7	0.0	7.8E-6	1.5E-6	3.8E-7	3.5E-7
F 22	6.0	2980	6.8E-6	2.4E-7	2.1E-6	0.0	9.2E-6	2.5E-6	2.2E-6	2.2E-6
F 38	6.8	2890	4.7E-6	2.3E-7	2.3E-6	0.0	7.3E-6	2.6E-6	2.3E-6	2.3E-6
G 15	8.7	3230	6.3E-6	2.2E-7	2.9E-6	0.0	9.5E-6	3.2E-6	3.0E-6	2.9E-6
G 20	3.2	2320	3.4E-6	2.0E-7	2.5E-6	0.0	6.2E-6	2.8E-6	2.6E-6	2.6E-6
H 11	9.4	1980	7.3E-6	1.1E-7	2.1E-6	0.0	9.5E-6	2.4E-6	2.2E-6	2.2E-6
I 09	5.9	2700	4.2E-6	1.5E-7	9.4E-5	0.0	1.0E-4	9.4E-5	9.4E-5	9.4E-5
I 18	7.8	1670	1.3E-5	2.4E-7	2.3E-5	1.4E-5	5.0E-5	3.7E-5	3.7E-5	3.7E-5
J 15	7.9	1950	5.7E-7	1.2E-7	1.4E-5	1.2E-5	2.7E-5	2.7E-5	2.6E-5	2.6E-5
J 16	8.9	2570	2.6E-7	1.1E-7	2.3E-5	1.1E-5	3.5E-5	3.5E-5	3.4E-5	3.4E-5
K 18	9.8	1280	1.0E-6	0.0	2.3E-5	1.1E-4	1.4E-4	1.4E-4	1.4E-4	1.4E-4
AVERAGES										
SPREADER,NO REINJ FROM D.C.			5.4E-6	8.0E-7	1.8E-6	0.0	8.1E-6	2.4E-6	1.9E-6	1.8E-6
MASS FIRED OVERFEED			4.0E-6	1.9E-7	2.5E-5	2.2E-5	5.1E-5	4.8E-5	4.7E-5	4.7E-5
HIGH			1.3E-5	2.1E-6	9.4E-5	1.1E-4	1.4E-4	1.4E-4	1.4E-4	1.4E-4
LOW			2.6E-7	1.1E-7	3.2E-7	1.1E-5	1.9E-6	3.9E-7	1.3E-8	2.8E-8

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

HAFNIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	3.8E-5	1.0E-6	2.5E-6	4.5E-5	8.6E-5	5.1E-5	4.7E-5	4.7E-5
B 31	6.0	2670	3.8E-5	7.8E-7	2.6E-6	4.6E-5	8.8E-5	5.3E-5	4.9E-5	4.9E-5
B 33	6.1	2130	3.6E-5	1.3E-6	2.6E-6	5.0E-5	9.0E-5	5.7E-5	5.3E-5	5.2E-5
C 44	8.9	4380	7.6E-5	4.2E-6	5.3E-7	6.6E-6	8.8E-5	1.7E-5	7.7E-6	7.3E-6
C 45	8.3	4360	7.1E-6	1.5E-6	5.3E-8	0.0	8.6E-6	1.8E-6	1.1E-7	6.6E-8
C 46	9.0	3230	5.5E-5	8.9E-7	4.0E-7	1.0E-5	6.6E-5	1.6E-5	1.1E-5	1.0E-5
AVERAGE			4.2E-5	1.6E-6	1.4E-6	2.6E-5	7.1E-5	3.2E-5	2.8E-5	2.8E-5
HIGH			7.6E-5	4.2E-6	2.6E-6	5.0E-5	9.0E-5	5.7E-5	5.3E-5	5.2E-5
LOW			7.1E-6	7.8E-7	5.3E-8	6.6E-6	8.6E-6	1.8E-6	1.1E-7	6.6E-8

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	2.4E-5	6.6E-6	0.0	0.0	3.1E-5	4.4E-6	2.2E-7	4.7E-7
E 16	8.3	2760	1.9E-5	2.3E-5	1.7E-6	0.0	4.4E-5	1.5E-5	2.0E-6	1.9E-6
E 17	6.2	2770	1.9E-5	1.8E-5	1.2E-6	0.0	3.8E-5	1.2E-5	1.5E-6	1.4E-6
F 22	6.0	2980	6.8E-5	2.4E-6	5.7E-6	0.0	7.7E-5	9.2E-6	6.2E-6	6.0E-6
F 30	6.8	2890	1.4E-5	6.8E-7	5.8E-6	0.0	2.1E-5	6.6E-6	5.9E-6	5.8E-6
G 15	8.7	3230	1.0E-4	5.6E-6	5.8E-6	0.0	1.1E-4	1.2E-5	6.6E-6	6.3E-6
G 28	9.2	2320	8.6E-5	4.9E-6	1.3E-5	0.0	1.0E-4	1.8E-5	1.3E-5	1.3E-5
H 11	9.4	1980	2.4E-6	7.5E-7	8.5E-6	0.0	1.2E-5	9.0E-6	8.5E-6	8.5E-6
I 09	5.9	2700	2.1E-5	2.2E-6	4.7E-4	0.0	4.9E-4	4.7E-4	4.7E-4	4.7E-4
I 10	7.8	1670	2.7E-5	3.5E-6	5.7E-5	4.3E-5	1.3E-4	1.0E-4	1.0E-4	1.0E-4
J 15	7.9	1550	2.3E-6	1.9E-6	4.7E-5	3.6E-5	8.7E-5	8.7E-5	8.3E-5	8.3E-5
J 16	8.9	2570	5.3E-7	1.7E-6	9.1E-5	3.4E-5	1.3E-4	1.3E-4	1.3E-4	1.3E-4
K 18	9.8	1280	1.5E-5	0.0	4.5E-5	2.3E-4	2.9E-4	2.7E-4	2.7E-4	2.7E-4
AVERAGES										
SPREADER,NO REINJ FROM D.C.			5.1E-5	9.1E-6	5.5E-6	0.0	6.6E-5	1.2E-5	5.9E-6	5.7E-6
MASS FIRED OVERFEED			1.3E-5	2.4E-6	1.0E-4	4.9E-5	1.7E-4	1.5E-4	1.5E-4	1.5E-4
HIGH			1.0E-4	2.3E-5	4.7E-4	2.3E-4	4.9E-4	4.7E-4	4.7E-4	4.7E-4
LOW			5.3E-7	6.8E-7	1.2E-6	3.4E-5	1.2E-5	4.4E-6	2.2E-7	4.7E-7

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

TANTALUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	4.6E-5	2.9E-6	2.5E-5	3.3E-4	4.1E-4	3.7E-4	3.6E-4	3.6E-4
B 31	6.0	2670	4.6E-5	1.6E-6	2.5E-5	3.4E-4	4.2E-4	3.8E-4	3.7E-4	3.7E-4
B 33	6.1	2130	4.4E-5	2.6E-6	2.6E-5	3.7E-4	4.5E-4	4.1E-4	4.0E-4	4.0E-4
C 44	8.9	4380	2.3E-4	2.9E-7	1.6E-6	0.0	2.3E-4	2.2E-5	3.2E-6	1.9E-6
C 45	8.3	4360	1.4E-4	1.4E-6	2.6E-6	0.0	1.5E-4	1.6E-5	3.6E-6	2.9E-6
C 46	9.0	3230	2.7E-4	5.7E-7	7.9E-7	0.0	2.8E-4	2.5E-5	2.7E-6	1.2E-6
AVERAGE			1.3E-4	1.6E-6	1.4E-5	1.8E-4	3.2E-4	2.0E-4	1.9E-4	1.9E-4
HIGH			2.7E-4	2.9E-6	2.6E-5	3.7E-4	4.5E-4	4.1E-4	4.0E-4	4.0E-4
LOW			4.4E-5	2.9E-7	7.9E-7	3.3E-4	1.5E-4	1.6E-5	2.7E-6	1.2E-6

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	6.1E-6	1.0E-5	0.0	0.0	1.6E-5	5.9E-6	1.2E-7	2.5E-7
E 16	8.3	2750	5.7E-5	4.6E-6	3.1E-6	0.0	6.5E-5	7.5E-6	3.5E-6	3.4E-6
E 17	6.2	2770	3.7E-5	5.5E-6	2.4E-6	0.0	4.5E-5	6.7E-6	2.7E-6	2.6E-6
F 22	6.0	2980	1.4E-4	4.8E-6	1.4E-5	0.0	1.6E-4	2.1E-5	1.5E-5	1.5E-5
F 30	6.8	2890	2.8E-5	1.4E-6	3.5E-5	0.0	6.4E-5	3.6E-5	3.5E-5	3.5E-5
G 15	8.7	3230	2.5E-5	7.8E-7	2.3E-5	0.0	4.9E-5	2.5E-5	2.4E-5	2.3E-5
G 20	9.2	2320	3.4E-5	6.9E-7	2.5E-5	0.0	6.0E-5	2.7E-5	2.6E-5	2.6E-5
H 11	9.4	1980	4.8E-6	7.5E-7	1.3E-5	0.0	1.8E-5	1.3E-5	1.3E-5	1.3E-5
I 09	5.9	2700	2.1E-5	5.2E-7	2.8E-4	0.0	3.0E-4	2.8E-4	2.8E-4	2.8E-4
I 18	7.8	1670	4.7E-5	4.7E-6	2.3E-4	1.4E-4	4.2E-4	3.7E-4	3.7E-4	3.7E-4
J 15	7.9	1550	2.8E-6	4.3E-6	1.4E-4	1.2E-4	2.7E-4	2.7E-4	2.6E-4	2.6E-4
J 16	8.9	2570	9.3E-7	3.9E-6	2.3E-4	3.4E-4	5.8E-4	5.8E-4	5.7E-4	5.7E-4
K 18	9.8	1280	3.9E-6	0.0	4.5E-5	5.7E-4	6.2E-4	6.2E-4	6.2E-4	6.2E-4
AVERAGES										
SPREADER,NO REINJ FROM D.C.			5.3E-5	3.0E-6	1.7E-5	0.0	7.3E-5	2.1E-5	1.8E-5	1.7E-5
MASS FIRED OVERFEED			1.2E-5	3.5E-6	1.3E-4	1.7E-4	3.2E-4	3.1E-4	3.0E-4	3.0E-4
HIGH			1.4E-4	1.0E-5	2.8E-4	5.7E-4	6.2E-4	6.2E-4	6.2E-4	6.2E-4
LOW			9.3E-7	5.2E-7	2.4E-6	1.2E-4	1.6E-5	5.9E-6	1.2E-7	2.5E-7

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

TUNGSTEN

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	2.3E-5	2.1E-5	2.5E-5	4.5E-5	1.1E-4	8.8E-5	7.0E-5	7.8E-5
B 31	6.0	2670	2.3E-5	5.8E-5	2.5E-5	4.6E-5	1.5E-4	1.2E-4	7.2E-5	7.1E-5
B 33	6.1	2130	2.2E-5	1.0E-4	3.9E-5	5.0E-5	2.1E-4	1.7E-4	9.0E-5	8.9E-5
C 44	8.9	4360	7.6E-5	1.7E-5	7.9E-6	4.0E-5	1.4E-4	6.7E-5	4.8E-5	4.8E-5
C 45	8.3	4360	3.5E-5	7.9E-6	2.6E-6	4.8E-5	8.6E-5	5.2E-5	4.3E-5	4.3E-5
C 46	9.0	3230	4.6E-5	1.8E-5	7.9E-6	6.0E-5	1.3E-4	8.5E-5	6.8E-5	6.8E-5
AVERAGE			3.8E-5	3.7E-5	1.8E-5	4.7E-5	1.4E-4	1.0E-4	6.5E-5	6.5E-5
HIGH			7.6E-5	1.0E-4	3.9E-5	6.0E-5	2.1E-4	1.7E-4	9.0E-5	8.9E-5
LOW			2.2E-5	7.9E-6	2.6E-6	4.0E-5	8.6E-5	5.2E-5	4.3E-5	4.3E-5

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	1.2E-5	1.4E-4	0.0	0.0	1.5E-4	7.8E-5	1.1E-6	2.3E-6
E 16	6.3	2760	1.9E-5	2.3E-5	3.1E-5	0.0	7.3E-5	4.4E-5	3.1E-5	3.1E-5
E 17	6.2	2770	5.6E-6	1.1E-5	1.2E-6	0.0	1.8E-5	7.5E-6	1.3E-6	1.3E-6
F 22	6.0	2980	4.1E-5	7.2E-6	1.4E-5	0.0	6.3E-5	2.0E-5	1.5E-5	1.4E-5
F 30	6.8	2690	4.7E-5	6.8E-6	3.5E-5	0.0	8.9E-5	4.0E-5	3.5E-5	3.5E-5
G 15	8.7	3230	2.5E-5	3.3E-6	5.8E-6	0.0	3.4E-5	8.5E-6	6.0E-6	6.0E-6
G 20	9.2	2320	8.6E-6	7.8E-6	6.4E-6	0.0	2.3E-5	1.1E-5	6.5E-6	6.4E-6
H 11	3.4	1940	2.4E-5	1.1E-5	8.5E-5	0.0	1.2E-4	9.2E-5	8.5E-5	8.5E-5
I 09	5.9	2700	4.2E-5	1.5E-5	4.7E-4	0.0	5.3E-4	4.8E-4	4.7E-4	4.7E-4
I 10	7.8	1670	2.0E-5	2.4E-5	5.7E-4	4.3E-5	6.5E-4	6.2E-4	6.1E-4	6.1E-4
J 15	7.9	1550	8.5E-7	3.1E-5	4.7E-5	3.6E-5	1.1E-4	1.1E-4	8.3E-5	8.3E-5
J 16	8.9	2570	4.0E-7	2.8E-5	2.3E-4	3.4E-5	2.9E-4	2.9E-4	2.6E-4	2.6E-4
K 18	9.8	1280	3.0E-6	0.0	4.5E-5	2.3E-4	2.8E-4	2.7E-4	2.7E-4	2.7E-4
AVERAGES										
SPREADER, NO REINJ FROM D.C.			2.4E-5	1.0E-5	1.6E-5	0.0	5.0E-5	2.2E-5	1.6E-5	1.6E-5
MASS FIRED OVERFEED			1.5E-5	3.6E-5	2.1E-4	4.9E-5	3.0E-4	2.8E-4	2.5E-4	2.6E-4
HIGH			4.7E-5	1.4E-4	5.7E-4	2.3E-4	6.5E-4	6.2E-4	6.1E-4	6.1E-4
LOW			4.0E-7	3.3E-6	1.2E-6	3.4E-5	1.8E-5	7.5E-6	1.1E-6	1.3E-6

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

RHENIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS G/KG FUEL: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	1.5E-5	6.0E-7	1.9E-6	3.3E-5	5.1E-5	3.7E-5	3.5E-5	3.5E-5
B 31	6.0	2670	1.5E-5	7.8E-7	1.7E-6	3.4E-5	5.2E-5	3.8E-5	3.6E-5	3.6E-5
B 33	6.1	2130	1.5E-5	1.3E-6	1.8E-6	3.7E-5	5.5E-5	4.1E-5	3.9E-5	3.9E-5
C 44	8.9	4380	2.3E-5	1.9E-7	2.6E-7	6.6E-6	3.0E-5	9.0E-6	7.1E-6	6.9E-6
C 45	8.3	4360	2.1E-5	1.6E-7	2.6E-7	6.7E-6	2.8E-5	8.9E-6	7.1E-6	7.0E-6
C 46	9.0	3230	2.7E-5	3.8E-7	4.0E-7	1.0E-5	3.8E-5	1.3E-5	1.1E-5	1.0E-5
AVERAGE			1.9E-5	5.7E-7	1.8E-6	2.1E-5	4.2E-5	2.5E-5	2.3E-5	2.2E-5
HIGH			2.7E-5	1.3E-6	1.9E-6	3.7E-5	5.5E-5	4.1E-5	3.9E-5	3.9E-5
LOW			1.5E-5	1.6E-7	2.6E-7	6.6E-6	2.8E-5	8.9E-6	7.1E-6	6.9E-6

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	EMISSIONS G/KG FUEL: 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	2.4E-6	1.4E-6	0.0	0.0	3.8E-6	8.4E-7	2.7E-8	5.8E-8
E 16	8.3	2760	1.1E-5	1.4E-6	6.9E-7	0.0	1.4E-5	1.8E-6	7.8E-7	7.4E-7
E 17	6.2	2770	1.1E-5	1.1E-6	1.2E-6	0.0	1.3E-5	2.2E-6	1.3E-6	1.3E-6
F 22	6.0	2980	2.1E-5	7.2E-7	5.7E-6	0.0	2.7E-5	6.8E-6	5.9E-6	5.8E-6
F 30	6.8	2890	1.4E-5	6.8E-7	2.3E-6	0.0	1.7E-5	3.1E-6	2.4E-6	2.4E-6
G 15	8.7	3230	5.0E-6	1.0E-6	5.8E-6	0.0	1.2E-5	6.6E-6	5.9E-6	5.9E-6
G 20	9.2	2320	6.9E-6	3.9E-7	3.8E-6	0.0	1.1E-5	4.2E-6	3.9E-6	3.8E-6
H 11	9.4	1980	4.8E-6	1.1E-7	8.5E-6	0.0	1.3E-5	8.7E-6	8.5E-6	8.5E-6
I 09	5.9	2700	2.1E-6	3.0E-7	2.8E-4	0.0	2.8E-4	2.8E-4	2.8E-4	2.8E-4
I 10	7.8	1670	2.7E-6	4.7E-7	4.0E-5	4.3E-5	8.5E-5	8.3E-5	8.2E-5	8.2E-5
J 15	7.9	1550	1.1E-7	2.5E-7	2.8E-5	3.6E-5	6.4E-5	6.4E-5	6.4E-5	6.4E-5
J 16	8.9	2570	5.3E-8	2.2E-7	4.1E-5	3.4E-5	7.6E-5	7.6E-5	7.5E-5	7.5E-5
K 10	9.8	1280	2.8E-6	0.0	4.5E-5	2.3E-4	2.8E-4	2.7E-4	2.7E-4	2.7E-4
AVERAGES										
SPREADER, NO REINJ FROM D.C.			1.2E-5	8.8E-7	3.3E-6	0.0	1.6E-5	4.1E-6	3.3E-6	3.3E-6
MASS FIRED OVERFEED			2.0E-6	3.9E-7	6.4E-5	4.9E-5	1.1E-4	1.1E-4	1.1E-4	1.1E-4
HIGH			2.1E-5	1.4E-6	2.8E-4	2.3E-4	2.8E-4	2.8E-4	2.8E-4	2.8E-4
LOW			5.3E-8	1.1E-7	6.9E-7	3.4E-5	3.8E-6	8.4E-7	2.7E-8	5.8E-8

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

G/KG FUEL

OSMIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 32	6.0	2710	2.3E-5	1.5E-6	5.0E-6	1.1E-4	1.4E-4	1.2E-4	1.2E-4	1.2E-4
B 31	6.0	2670	2.3E-5	9.4E-7	5.2E-6	1.1E-4	1.4E-4	1.2E-4	1.2E-4	1.2E-4
B 33	6.1	2130	2.2E-5	1.0E-6	5.3E-6	1.2E-4	1.5E-4	1.3E-4	1.3E-4	1.3E-4
C 44	8.9	4380	2.3E-5	2.9E-7	1.1E-6	0.0	2.4E-5	3.3E-6	1.2E-6	1.1E-6
C 45	8.3	4360	2.1E-5	2.4E-7	1.1E-6	0.0	2.2E-5	3.1E-6	1.2E-6	1.1E-6
C 46	9.0	3230	2.7E-5	5.7E-7	7.9E-7	0.0	2.9E-5	3.6E-6	1.0E-6	8.4E-7
AVERAGE			2.3E-5	7.6E-7	3.1E-6	5.8E-5	8.6E-5	6.4E-5	6.2E-5	6.2E-5
HIGH			2.7E-5	1.5E-6	5.3E-6	1.2E-4	1.5E-4	1.3E-4	1.3E-4	1.3E-4
LOW			2.1E-5	2.4E-7	7.9E-7	1.1E-4	2.2E-5	3.1E-6	1.0E-6	8.4E-7

• STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR •

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	3.7E-6	1.6E-6	0.0	0.0	5.3E-6	1.0E-6	3.7E-8	8.0E-8
E 16	8.3	2760	1.1E-5	1.4E-6	1.7E-6	0.0	1.5E-5	2.8E-6	1.8E-6	1.8E-6
E 17	6.2	2770	1.1E-5	1.1E-6	2.4E-6	0.0	1.5E-5	3.4E-6	2.5E-6	2.5E-6
F 22	6.0	2950	4.1E-5	1.4E-6	1.4E-5	0.0	5.7E-5	1.6E-5	1.5E-5	1.4E-5
F 30	6.8	2890	2.8E-5	1.4E-6	5.8E-6	0.0	3.5E-5	7.4E-6	6.0E-6	5.9E-6
G 15	8.7	3230	6.3E-6	1.0E-6	5.8E-6	0.0	1.3E-5	6.6E-6	5.9E-6	5.9E-6
G 20	9.2	2320	8.6E-6	4.9E-7	6.4E-6	0.0	1.5E-5	6.9E-6	6.4E-6	6.4E-6
H 11	9.4	1980	4.8E-6	2.2E-7	1.3E-5	0.0	1.8E-5	1.3E-5	1.3E-5	1.3E-5
I 09	5.9	2730	2.6E-6	3.7E-7	4.7E-4	0.0	4.7E-4	4.7E-4	4.7E-4	4.7E-4
I 18	7.8	1670	3.3E-6	7.1E-7	5.7E-5	7.1E-5	1.3E-4	1.3E-4	1.3E-4	1.3E-4
J 15	7.9	1550	1.4E-7	3.1E-7	4.7E-5	5.9E-5	1.1E-4	1.1E-4	1.1E-4	1.1E-4
J 16	8.9	2570	6.6E-8	2.8E-7	9.1E-5	5.7E-5	1.5E-4	1.5E-4	1.5E-4	1.5E-4
K 18	9.8	1280	2.0E-6	0.0	4.5E-5	2.3E-4	2.8E-4	2.7E-4	2.7E-4	2.7E-4
AVERAGES										
SPREADER,NO REINJ FROM D.C.			1.8E-5	1.1E-6	6.1E-6	0.0	2.5E-5	7.3E-6	6.2E-6	6.1E-6
MASS FIRED OVERFEED			2.4E-6	5.0E-7	1.0E-4	6.0E-5	1.7E-4	1.6E-4	1.6E-4	1.6E-4
HIGH			4.1E-5	1.6E-6	4.7E-4	2.3E-4	4.7E-4	4.7E-4	4.7E-4	4.7E-4
LOW			6.6E-8	2.2E-7	1.7E-6	5.7E-5	5.3E-6	1.0E-6	3.7E-8	8.0E-8

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

G/KG FUEL

IRIDIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	2.3E-5	7.4E-7	2.5E-6	4.5E-5	7.1E-5	5.0E-5	4.7E-5	4.7E-5
B 31	6.0	2670	2.3E-5	6.2E-7	2.6E-6	4.6E-5	7.2E-5	5.1E-5	4.9E-5	4.9E-5
B 33	6.1	2130	2.2E-5	1.0E-6	2.6E-6	5.0E-5	7.5E-5	5.5E-5	5.3E-5	5.2E-5
C 44	6.9	4380	2.3E-5	2.9E-7	5.3E-7	0.0	2.4E-5	2.8E-6	6.9E-7	5.6E-7
C 45	6.3	4360	2.1E-5	2.4E-7	5.3E-7	6.7E-6	2.9E-5	9.2E-6	7.4E-6	7.2E-6
C 46	3.0	3230	2.7E-5	5.7E-7	4.0E-7	1.0E-5	3.8E-5	1.3E-5	1.1E-5	1.0E-5
AVERAGE			2.3E-5	5.8E-7	1.5E-6	2.6E-5	5.2E-5	3.0E-5	2.8E-5	2.8E-5
HIGH			2.7E-5	1.0E-6	2.6E-6	5.0E-5	7.5E-5	5.5E-5	5.3E-5	5.2E-5
LOW			2.1E-5	2.4E-7	4.0E-7	6.7E-6	2.4E-5	2.8E-6	6.9E-7	5.6E-7

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2670	2.4E-6	1.4E-6	0.0	0.0	3.8E-6	8.4E-7	2.7E-8	5.8E-8
E 16	8.3	2760	5.7E-6	6.9E-7	6.9E-7	0.0	7.1E-6	1.3E-6	7.4E-7	7.2E-7
E 17	6.2	2770	5.6E-6	5.5E-7	1.2E-6	0.0	7.4E-6	1.7E-6	1.3E-6	1.2E-6
F 22	6.0	2980	2.1E-5	7.2E-7	5.7E-6	0.0	2.7E-5	6.8E-6	5.9E-6	5.8E-6
F 30	6.8	2830	1.4E-5	6.8E-7	3.5E-6	0.0	1.8E-5	4.3E-6	3.6E-6	3.5E-6
G 15	8.7	3230	5.0E-6	5.6E-7	4.1E-6	0.0	1.0E-5	4.6E-6	4.1E-6	4.1E-6
G 20	3.2	2320	8.6E-6	4.9E-7	6.4E-6	0.0	1.5E-5	6.9E-6	6.4E-6	6.4E-6
H 11	3.4	1980	2.4E-6	1.1E-7	8.5E-6	0.0	1.1E-5	8.6E-6	8.5E-6	8.5E-6
I 09	5.9	2700	2.6E-6	3.7E-7	2.8E-4	0.0	2.9E-4	2.8E-4	2.8E-4	2.8E-4
I 18	7.8	1670	3.3E-6	7.1E-7	4.0E-5	4.3E-5	8.6E-5	8.3E-5	8.2E-5	8.2E-5
J 15	7.9	1550	1.4E-7	3.1E-7	2.8E-5	3.6E-5	6.4E-5	6.4E-5	6.4E-5	6.4E-5
J 16	6.9	2570	6.6E-8	2.8E-7	4.1E-5	3.4E-5	7.6E-5	7.6E-5	7.5E-5	7.5E-5
K 18	9.8	1240	2.0E-6	0.0	4.5E-5	2.3E-4	2.8E-4	2.7E-4	2.7E-4	2.7E-4
AVERAGES										
SPREADER,NO REINJ FROM D.C.			1.0E-5	6.1E-7	3.6E-6	0.0	1.4E-5	4.2E-6	3.7E-6	3.6E-6
MASS FIRED OVERFEED			1.9E-6	4.5E-7	6.4E-5	4.9E-5	1.1E-4	1.1E-4	1.1E-4	1.1E-4
HIGH			2.1E-5	1.4E-6	2.8E-4	2.3E-4	2.9E-4	2.8E-4	2.8E-4	2.8E-4
LOW			6.6E-8	1.1E-7	6.9E-7	3.4E-5	3.8E-6	8.4E-7	2.7E-8	5.8E-8

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

G/KG FUEL

PLATINUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 13 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	3.8E-5	1.0E-6	2.5E-6	4.5E-4	4.9E-4	4.5E-4	4.5E-4	4.5E-4
B 31	6.0	2670	3.8E-5	7.8E-7	2.6E-6	5.7E-4	6.2E-4	5.8E-4	5.8E-4	5.8E-4
B 33	6.1	2130	3.6E-5	1.3E-6	2.6E-6	1.2E-4	1.6E-4	1.3E-4	1.3E-4	1.3E-4
C 44	8.9	4380	2.3E-5	2.9E-7	5.3E-7	0.0	2.4E-5	2.8E-6	6.9E-7	5.6E-7
C 45	8.3	4360	2.1E-5	2.4E-7	5.3E-7	0.0	2.2E-5	2.6E-6	6.8E-7	5.6E-7
C 46	9.0	3230	2.7E-5	5.7E-7	4.0E-7	0.0	2.8E-5	3.2E-6	5.9E-7	4.4E-7
AVERAGE			3.1E-5	7.0E-7	1.5E-6	1.9E-4	2.2E-4	2.0E-4	1.9E-4	1.9E-4
HIGH			3.8E-5	1.3E-6	2.6E-6	5.7E-4	6.2E-4	5.8E-4	5.8E-4	5.8E-4
LOW			2.1E-5	2.4E-7	4.0E-7	1.2E-4	2.2E-5	2.6E-6	5.9E-7	4.4E-7

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	3.7E-6	2.6E-6	0.0	0.0	6.3E-6	1.5E-6	4.4E-8	9.4E-8
E 16	8.3	2760	5.7E-6	6.9E-7	6.9E-7	0.0	7.1E-6	1.3E-6	7.4E-7	7.2E-7
E 17	6.2	2770	5.6E-6	5.5E-7	1.2E-6	0.0	7.4E-6	1.7E-6	1.3E-6	1.2E-6
F 22	6.0	2980	2.1E-5	7.2E-7	5.7E-6	0.0	2.7E-5	6.8E-6	5.9E-6	5.8E-6
F 30	6.8	2890	1.4E-5	6.8E-7	3.5E-6	0.0	1.8E-5	4.3E-6	3.6E-6	3.5E-6
G 19	8.7	3230	6.3E-6	1.0E-6	5.8E-6	0.0	1.3E-5	6.6E-6	5.9E-6	5.9E-6
G 20	9.2	2320	8.6E-6	4.9E-7	6.4E-6	0.0	1.5E-5	6.9E-6	6.4E-6	6.4E-6
H 11	9.4	1980	2.4E-6	1.1E-7	8.5E-6	0.0	1.1E-5	8.6E-6	8.5E-6	8.5E-6
I 09	5.9	2700	2.6E-6	3.7E-7	4.7E-4	0.0	4.7E-4	4.7E-4	4.7E-4	4.7E-4
I 18	7.8	1670	3.3E-6	7.1E-7	4.0E-5	1.4E-4	1.9E-4	1.8E-4	1.8E-4	1.8E-4
J 15	7.9	1550	1.4E-7	3.1E-7	2.8E-5	1.2E-4	1.5E-4	1.5E-4	1.5E-4	1.5E-4
J 16	8.9	2570	6.6E-8	2.8E-7	4.1E-5	1.1E-4	1.6E-4	1.6E-4	1.6E-4	1.6E-4
K 18	9.8	1280	3.0E-6	0.0	4.5E-5	2.3E-4	2.8E-4	2.7E-4	2.7E-4	2.7E-4
AVERAGES										
SPREADER,NO REINJ FROM D.C.			1.8E-5	6.9E-7	3.9E-6	0.0	1.5E-5	4.6E-6	4.8E-6	3.9E-6
MASS FIRED OVERFEED			2.2E-6	6.2E-7	9.0E-5	8.6E-5	1.8E-4	1.8E-4	1.8E-4	1.8E-4
HIGH			2.1E-5	2.6E-6	4.7E-4	2.3E-4	4.7E-4	4.7E-4	4.7E-4	4.7E-4
LOW			6.6E-8	1.1E-7	6.9E-7	1.1E-4	6.3E-6	1.3E-6	4.4E-8	9.4E-8

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

G/KG FUEL

GOLD

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	7.7E-6	4.6E-7	1.2E-6	1.1E-4	1.2E-4	1.1E-4	1.1E-4	1.1E-4
B 31	6.0	2670	7.7E-6	4.7E-7	1.3E-6	4.6E-5	5.5E-5	4.8E-5	4.7E-5	4.7E-5
B 33	6.1	2130	7.3E-6	7.6E-7	1.3E-6	1.2E-4	1.3E-4	1.3E-4	1.3E-4	1.3E-4
C 44	8.9	4360	7.6E-6	1.8E-7	2.6E-7	0.0	8.0E-6	1.0E-6	3.2E-7	2.7E-7
C 45	8.3	4360	7.1E-6	8.2E-8	2.6E-7	0.0	7.4E-6	9.5E-7	3.1E-7	2.6E-7
C 46	9.0	3230	9.1E-6	1.9E-7	2.0E-7	0.0	1.0E-5	1.1E-6	2.6E-7	2.1E-7
AVERAGE			7.7E-6	3.4E-7	7.6E-7	4.7E-5	5.6E-5	4.9E-5	4.8E-5	4.8E-5
HIGH			9.1E-6	7.6E-7	1.3E-6	1.2E-4	1.3E-4	1.3E-4	1.3E-4	1.3E-4
LOW			7.1E-6	8.2E-8	2.0E-7	4.6E-5	7.4E-6	9.5E-7	2.6E-7	2.1E-7

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	8.6E-7	5.6E-7	0.0	0.0	1.4E-6	3.3E-7	1.0E-8	2.1E-8
E 16	8.3	2760	3.8E-6	4.6E-7	6.9E-7	0.0	5.0E-6	1.1E-6	7.2E-7	7.1E-7
E 17	6.2	2770	3.7E-6	3.7E-7	8.1E-7	0.0	4.9E-6	1.1E-8	8.4E-7	8.3E-7
F 22	6.0	2480	1.4E-5	4.8E-7	2.9E-6	0.0	1.7E-5	3.6E-6	3.0E-6	2.9E-6
F 30	6.8	2690	9.5E-6	4.5E-7	2.3E-6	0.0	1.2E-5	2.9E-6	2.4E-6	2.3E-6
G 15	6.7	3230	2.5E-6	2.2E-7	2.9E-6	0.0	5.7E-6	3.1E-6	2.9E-6	2.9E-6
G 20	9.2	2320	3.4E-6	2.0E-7	3.8E-6	0.0	7.4E-6	4.0E-6	3.8E-6	3.8E-6
H 11	9.4	1980	1.6E-6	7.5E-8	3.4E-6	0.0	5.1E-6	3.5E-6	3.4E-6	3.4E-6
I 09	5.9	2700	1.0E-6	1.5E-7	1.9E-4	0.0	1.9E-4	1.9E-4	1.9E-4	1.9E-4
I 18	7.8	1670	2.0E-6	2.4E-7	2.3E-5	2.1E-5	4.6E-5	4.4E-5	4.4E-5	4.4E-5
J 15	7.9	1950	5.7E-8	1.2E-7	1.4E-5	1.8E-5	3.2E-5	3.2E-5	3.2E-5	3.2E-5
J 16	4.9	2570	2.6E-8	1.1E-7	2.3E-5	1.7E-5	4.0E-5	4.0E-5	4.0E-5	4.0E-5
K 18	4.8	1280	1.0E-6	0.0	2.3E-5	1.1E-4	1.4E-4	1.4E-4	1.4E-4	1.4E-4
AVERAGES										
SPREADER, NO REINJ FROM D.C.			6.1E-6	3.6E-7	2.2E-6	0.0	8.7E-6	2.6E-6	2.3E-6	2.3E-6
MASS FIRED OVERFEED			9.4E-7	1.8E-7	3.9E-5	2.4E-5	6.5E-5	6.4E-5	6.4E-5	6.4E-5
HIGH			1.4E-5	5.6E-7	1.9E-4	1.1E-4	1.9E-4	1.9E-4	1.9E-4	1.9E-4
LOW			2.6E-8	7.5E-8	6.9E-7	1.7E-5	1.4E-6	3.3E-7	1.0E-8	2.1E-8

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

G/KG FUEL

MERCURY

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210					6.0E-6			
A 35	6.0	3140					5.9E-6			
B 30	6.0	2710	3.8E-6	1.5E-6	5.2E-6	3.7E-5	4.7E-5	4.3E-5	4.2E-5	4.2E-5
B 31	6.0	2670	3.8E-6	5.2E-7	4.1E-6	3.0E-5	3.8E-5	3.5E-5	3.4E-5	3.4E-5
B 33	6.1	2130	3.6E-6	7.6E-7	3.0E-6	1.6E-5	2.4E-5	2.0E-5	1.9E-5	1.9E-5
C 44	8.9	4380	3.8E-6	1.4E-7	3.4E-6	7.3E-5	8.1E-5	7.7E-5	7.7E-5	7.7E-5
C 45	8.3	4360	2.1E-6	1.1E-7	2.1E-6	0.0	4.4E-6	2.4E-6	2.2E-6	2.1E-6
C 46	9.0	3230	2.7E-6	3.0E-7	1.4E-5	0.0	1.7E-5	1.4E-5	1.4E-5	1.4E-5
AVERAGE			2.5E-6	4.2E-7	3.9E-6	2.0E-5	2.8E-5	2.5E-5	2.5E-5	2.5E-5
HIGH			3.8E-6	1.5E-6	1.4E-5	7.3E-5	8.1E-5	7.7E-5	7.7E-5	7.7E-5
LOW			2.1E-6	1.1E-7	2.1E-6	1.6E-5	4.4E-6	2.4E-6	2.2E-6	2.1E-6

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	13.2	2670	4.9E-8	2.7E-8	0.0	0.0	7.6E-8	1.6E-8	<1.0E-9	1.1E-9
E 16	8.3	2760	1.5E-6	9.1E-8	7.2E-6	6.4E-6	1.5E-5	1.4E-5	1.4E-5	1.4E-5
E 17	6.2	2770	7.4E-7	7.4E-8	7.9E-6	2.6E-6	1.1E-5	1.1E-5	1.1E-5	1.1E-5
F 22	6.0	2980	4.8E-6	1.1E-6	1.4E-5	5.1E-6	2.5E-5	2.0E-5	2.0E-5	2.0E-5
F 30	6.8	2890	1.5E-5	2.3E-6	1.1E-5	7.8E-6	3.6E-5	2.0E-5	1.9E-5	1.9E-5
G 15	8.7	3230	3.8E-7	3.1E-7	1.5E-6	9.3E-6	1.1E-5	1.1E-5	1.1E-5	1.1E-5
G 20	4.2	2320	5.2E-7	3.3E-7	2.8E-6	4.4E-5	4.7E-5	4.7E-5	4.6E-5	4.6E-5
H 11	9.4	1980	4.0E-7	3.7E-8	8.1E-6	2.7E-6	1.1E-5	1.1E-5	1.1E-5	1.1E-5
I 09	5.9	2700	3.1E-7	1.8E-7	8.5E-9	1.8E-5	1.8E-5	1.8E-5	1.8E-5	1.8E-5
I 18	7.8	1670	3.3E-7	4.9E-7	3.4E-9	5.7E-6	6.5E-6	6.0E-6	5.7E-6	5.7E-6
J 15	7.9	1550	2.8E-8	2.5E-7	1.4E-9	1.1E-5	1.1E-5	1.1E-5	1.1E-5	1.1E-5
J 16	8.9	2570	1.6E-8	5.7E-7	2.3E-9	2.3E-6	2.9E-6	2.9E-6	2.3E-6	2.3E-6
K 18	9.8	1280	1.0E-7	6.3E-8	1.8E-6	1.4E-5	1.5E-5	1.5E-5	1.5E-5	1.5E-5
AVERAGES										
SPREADER,NO REINJ FROM D.C.			3.8E-6	6.9E-7	7.4E-6	1.2E-5	2.4E-5	2.8E-5	2.8E-5	2.8E-5
MASS FIRED OVERFEED			1.8E-7	2.3E-7	1.3E-6	7.6E-6	9.3E-6	9.1E-6	8.9E-6	8.9E-6
HIGH			1.5E-5	2.3E-6	1.4E-5	4.4E-5	4.7E-5	4.7E-5	4.6E-5	4.6E-5
LOW			1.6E-8	2.7E-8	1.4E-9	2.3E-6	7.6E-8	1.6E-8	<1.0E-9	1.1E-9

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

G/KG FUEL

THALLIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210					5.8E-6			
A 35	6.0	3140					6.3E-6			
B 30	6.0	2710	2.3E-5	2.1E-4	1.9E-6	4.5E-5	2.8E-4	2.1E-4	4.8E-5	4.7E-5
B 31	6.0	2670	1.5E-5	2.5E-4	1.7E-6	4.6E-5	3.2E-4	2.4E-4	5.0E-5	4.8E-5
B 33	6.1	2130	1.5E-5	3.0E-4	1.8E-6	5.0E-5	3.7E-4	2.8E-4	5.4E-5	5.2E-5
C 44	8.9	4380	1.5E-5	1.3E-4	2.6E-7	4.0E-5	1.8E-4	1.4E-4	4.1E-5	4.0E-5
C 45	8.3	4360	1.4E-5	3.2E-5	5.3E-7	4.0E-5	8.6E-5	6.5E-5	4.1E-5	4.1E-5
C 46	9.0	3230	9.1E-5	1.2E-4	7.9E-7	6.8E-5	2.8E-4	1.6E-4	6.2E-5	6.1E-5
AVERAGE			2.2E-5	1.3E-4	8.7E-7	3.5E-5	1.9E-4	1.4E-4	3.8E-5	3.8E-5
HIGH			9.1E-5	3.0E-4	1.9E-6	6.8E-5	3.7E-4	2.8E-4	6.2E-5	6.1E-5
LOW			1.4E-5	3.2E-5	2.6E-7	4.0E-5	5.8E-6	5.8E-6	5.8E-6	5.8E-6

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SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	3.7E-5	9.4E-4	0.0	0.0	1.0E-3	5.2E-4	6.8E-6	1.5E-5
E 16	8.3	2760	5.7E-5	1.4E-4	3.1E-6	0.0	2.0E-4	8.0E-5	4.5E-6	3.9E-6
E 17	8.2	2770	1.1E-4	1.1E-4	1.2E-6	0.0	2.2E-4	6.6E-5	2.8E-6	2.1E-6
F 22	6.0	2980	1.4E-4	2.4E-5	5.7E-6	0.0	1.7E-4	2.3E-5	6.8E-6	6.4E-6
F 30	6.8	2690	9.5E-5	1.4E-5	5.8E-6	0.0	1.1E-4	1.6E-5	6.5E-6	6.2E-6
G 15	8.7	3230	8.8E-5	3.3E-4	5.8E-6	0.0	4.3E-4	1.9E-4	8.8E-6	7.5E-6
G 20	9.2	2320	5.2E-5	2.9E-6	1.3E-5	0.0	6.7E-5	1.6E-5	1.3E-5	1.3E-5
H 11	9.4	1980	3.2E-4	1.1E-4	8.5E-6	0.0	4.4E-4	8.0E-5	1.2E-5	1.5E-5
I 09	5.9	2700	3.7E-4	7.5E-4	3.8E-4	0.0	1.5E-3	8.0E-4	3.8E-4	3.9E-4
I 14	7.8	1670	4.7E-5	1.2E-3	4.5E-5	7.1E-5	1.3E-3	7.6E-4	1.3E-4	1.3E-4
J 15	7.9	1550	5.7E-6	6.2E-4	3.3E-5	5.9E-5	7.2E-4	7.2E-4	1.0E-4	1.0E-4
J 16	8.9	2570	2.6E-6	5.6E-4	4.6E-5	5.7E-5	6.7E-4	6.7E-4	1.1E-4	1.1E-4
K 18	9.8	1280	1.0E-5	0.0	9.1E-5	4.6E-4	5.6E-4	5.5E-4	5.5E-4	5.5E-4
AVERAGES										
SPREADER,NO REINJ FROM D.C.			9.0E-5	1.0E-4	5.7E-6	0.0	2.0E-4	6.6E-5	7.1E-6	6.5E-6
MASS FIRED OVERFEED			1.1E-4	5.9E-4	8.6E-5	9.2E-5	8.8E-4	5.8E-4	1.8E-4	1.9E-4
HIGH			3.7E-4	1.2E-3	3.8E-4	4.6E-4	1.5E-3	8.0E-4	5.5E-4	5.5E-4
LOW			2.6E-6	2.9E-6	1.2E-6	5.7E-5	6.7E-5	1.6E-5	2.8E-6	2.1E-6

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

G/KG FUEL

LEAD

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210					2.3E-4			
A 35	6.0	3140					2.7E-4			
B 30	6.0	2710	7.7E-5	5.3E-3	1.9E-5	1.1E-4	5.5E-3	4.1E-3	1.7E-4	1.4E-4
B 31	6.0	2670	7.7E-5	6.3E-3	1.9E-5	1.1E-4	6.5E-3	4.9E-3	1.8E-4	1.4E-4
B 33	6.1	2130	1.5E-4	8.0E-3	1.9E-5	1.2E-4	8.2E-3	6.1E-3	2.0E-4	1.6E-4
C 44	8.9	4380	5.3E-4	1.0E-3	5.3E-6	0.0	1.6E-3	8.3E-4	1.6E-5	7.6E-6
C 45	8.3	4360	7.1E-5	5.9E-4	2.1E-6	0.0	6.6E-4	4.5E-4	6.8E-6	3.1E-6
C 46	9.0	3230	9.1E-4	8.2E-4	3.6E-6	0.0	1.7E-3	7.0E-4	1.6E-5	6.2E-6
AVERAGE			2.3E-4	2.8E-3	8.5E-6	4.4E-5	3.1E-3	2.2E-3	1.4E-4	1.2E-4
HIGH			9.1E-4	8.0E-3	1.9E-5	1.2E-4	8.2E-3	6.1E-3	2.7E-4	2.7E-4
LOW			7.1E-5	5.9E-4	2.1E-6	1.1E-4	2.3E-4	2.3E-4	6.8E-6	3.1E-6

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2670	1.2E-4	3.8E-3	0.0	0.0	3.9E-3	2.1E-3	2.7E-5	5.8E-5
E 16	4.3	2760	1.1E-4	6.9E-4	3.1E-5	0.0	8.3E-4	4.1E-4	3.7E-5	3.4E-5
E 17	6.2	2770	3.7E-4	5.5E-4	1.2E-6	0.0	9.3E-4	3.2E-4	7.7E-6	4.9E-6
F 22	6.0	2980	4.1E-4	2.4E-3	1.4E-5	0.0	2.8E-3	1.3E-3	3.4E-5	2.6E-5
F 30	6.8	2690	9.5E-5	1.4E-3	2.3E-6	0.0	1.4E-3	7.5E-4	1.2E-5	8.1E-6
G 15	6.7	3230	1.3E-3	1.1E-3	5.8E-5	0.0	2.4E-3	7.1E-4	7.5E-5	6.8E-5
G 20	9.2	2320	5.2E-4	6.9E-4	6.4E-5	0.0	1.3E-3	4.6E-4	7.2E-5	6.8E-5
H 11	9.4	1980	1.6E-3	2.2E-5	3.4E-5	0.0	1.7E-3	1.0E-4	4.5E-5	5.8E-5
I 09	5.9	2700	5.2E-4	2.2E-3	4.7E-4	0.0	3.2E-3	1.7E-3	4.9E-4	5.1E-4
I 18	7.8	1670	1.1E-4	4.7E-3	1.1E-4	2.1E-7	4.9E-3	2.7E-3	1.5E-4	1.9E-4
J 15	7.9	1550	2.0E-4	1.2E-2	9.4E-5	3.6E-5	1.3E-2	1.3E-2	2.2E-4	3.2E-4
J 16	8.9	2570	4.0E-5	1.1E-2	9.1E-5	5.7E-5	1.1E-2	1.1E-2	2.3E-4	3.2E-4
K 18	9.8	1280	3.9E-5	0.0	4.5E-5	2.3E-4	3.1E-4	2.8E-4	2.7E-4	2.7E-4
AVERAGES										
SPREADER,NO REINJ FROM D.C.			4.6E-4	1.1E-3	2.8E-5	0.0	1.6E-3	6.7E-4	4.8E-5	3.5E-5
MASS FIRED OVERFEED			3.8E-4	4.9E-3	1.2E-4	4.6E-5	5.4E-3	4.4E-3	2.8E-4	2.5E-4
HIGH			1.6E-3	1.2E-2	4.7E-4	2.3E-4	1.3E-2	1.3E-2	4.9E-4	5.1E-4
LOW			3.9E-5	2.2E-5	1.2E-6	2.1E-7	3.1E-4	1.0E-4	7.7E-6	4.9E-6

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

G/KG FUEL

BISMUTH

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
A 34	5.9	3210					1.8E-4			
A 35	6.0	3140					1.6E-4			
B 30	6.0	2710	7.7E-6	1.1E-4	1.2E-6	4.5E-5	1.6E-4	1.3E-4	4.7E-5	4.6E-5
B 31	6.0	2670	7.7E-6	1.3E-4	1.3E-6	4.6E-5	1.8E-4	1.4E-4	4.8E-5	4.7E-5
B 33	6.1	2130	1.5E-5	2.0E-4	1.3E-6	5.0E-5	2.7E-4	2.0E-4	5.3E-5	5.1E-5
C 44	8.9	4380	7.6E-6	1.1E-5	1.3E-7	0.0	1.9E-5	9.1E-6	2.6E-7	1.6E-7
C 45	8.3	4360	1.4E-5	6.4E-6	1.3E-7	0.0	2.1E-5	6.2E-6	2.8E-7	1.6E-7
C 46	9.0	3230	9.1E-6	7.4E-6	2.0E-7	0.0	1.7E-5	6.6E-6	3.1E-7	2.2E-7
AVERAGE			7.6E-6	5.7E-5	5.4E-7	1.8E-5	1.3E-4	1.0E-4	6.1E-5	6.1E-5
HIGH			1.5E-5	2.0E-4	1.3E-6	5.0E-5	2.7E-4	2.0E-4	1.8E-4	1.8E-4
LOW			7.6E-6	6.4E-6	1.3E-7	4.5E-5	1.7E-5	6.2E-6	2.6E-7	1.6E-7

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	3.7E-6	1.4E-4	0.0	0.0	1.4E-4	7.7E-5	1.8E-6	2.2E-6
E 16	8.3	2760	1.9E-6	6.9E-6	3.1E-7	0.0	9.1E-6	4.1E-6	3.7E-7	3.5E-7
E 17	8.2	2770	1.9E-6	1.8E-6	8.1E-7	0.0	4.5E-6	1.9E-6	8.4E-7	8.3E-7
F 22	6.0	2980	6.8E-6	7.2E-6	5.7E-6	0.0	2.0E-5	1.0E-5	5.8E-6	5.6E-6
F 30	6.8	2840	1.4E-5	2.3E-6	1.7E-6	0.0	1.8E-5	3.4E-6	1.8E-6	1.8E-6
G 15	8.7	3230	6.3E-6	2.2E-5	2.9E-6	0.0	3.1E-5	1.5E-5	3.1E-6	3.0E-6
G 23	8.2	2320	8.6E-6	2.0E-5	2.5E-6	0.0	3.1E-5	1.4E-5	2.7E-6	2.7E-6
H 11	8.4	1980	7.3E-6	2.2E-6	3.4E-6	0.0	1.3E-5	4.8E-6	3.5E-6	3.5E-6
I 09	5.9	2730	4.2E-6	6.0E-6	1.9E-4	0.0	2.0E-4	1.9E-4	1.9E-4	1.9E-4
I 18	7.8	1670	1.3E-6	2.4E-5	2.3E-5	2.1E-5	6.9E-5	5.7E-5	4.4E-5	4.4E-5
J 15	7.9	1590	2.3E-7	3.1E-5	1.4E-5	1.8E-5	6.3E-5	6.3E-5	3.2E-5	3.2E-5
J 16	8.9	2570	2.6E-8	1.1E-5	2.3E-5	1.7E-5	5.1E-5	5.1E-5	4.0E-5	4.0E-5
K 16	8.8	1240	2.0E-6	0.0	2.3E-5	1.1E-4	1.4E-4	1.4E-4	1.4E-4	1.4E-4
AVERAGES										
SPREADER,NO REINJ FROM D.C.			6.6E-6	1.0E-5	2.3E-6	0.0	1.9E-5	8.0E-6	2.5E-6	2.4E-6
MASS FIRED OVERFEED			2.7E-6	3.1E-5	3.9E-5	2.4E-5	1.0E-4	4.3E-5	6.4E-5	6.4E-5
HIGH			1.4E-5	1.4E-4	1.9E-4	1.1E-4	2.0E-4	1.9E-4	1.9E-4	1.9E-4
LOW			2.6E-8	1.8E-6	3.1E-7	1.7E-5	4.5E-6	1.9E-6	3.7E-7	3.5E-7

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

G/KG FUEL

THORIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 10 UM + 3 UM CYCLONE	1 UM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	1.5E-5	7.0E-6	1.2E-6	4.5E-5	6.8E-5	5.2E-5	4.6E-5	4.6E-5
B 31	6.0	2670	3.1E-5	7.5E-6	1.3E-6	4.6E-5	8.6E-5	5.6E-5	4.8E-5	4.7E-5
B 33	6.1	2130	7.3E-5	3.1E-5	1.3E-6	5.0E-5	1.5E-4	8.0E-5	5.2E-5	5.1E-5
C 44	4.9	4340	1.5E-4	9.1E-6	2.6E-7	0.0	1.6E-4	2.1E-5	1.4E-6	5.1E-7
C 45	4.3	4360	1.4E-4	7.2E-6	2.6E-7	0.0	1.5E-4	1.8E-5	1.3E-6	4.9E-7
C 46	4.0	3230	9.1E-5	6.3E-6	4.0E-7	0.0	1.0E-4	1.3E-5	1.1E-6	5.4E-7
AVERAGE			8.4E-5	1.1E-5	8.0E-7	2.3E-5	1.2E-4	4.0E-5	2.5E-5	2.4E-5
HIGH			1.5E-4	3.1E-5	1.3E-6	5.0E-5	1.6E-4	8.0E-5	5.2E-5	5.1E-5
LOW			1.5E-5	6.3E-6	2.6E-7	4.5E-5	6.8E-5	1.3E-5	1.1E-6	4.9E-7

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 18.5 UM +5.9 UM CYCLONE	1.4 UM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	1.2E-5	5.7E-6	0.0	0.0	1.8E-5	3.5E-6	1.3E-7	2.7E-7
E 16	8.3	2760	7.7E-5	6.9E-6	6.9E-7	0.0	8.4E-5	6.9E-6	1.3E-6	1.0E-6
E 17	6.2	2770	3.7E-5	5.5E-5	1.2E-6	0.0	9.4E-5	3.3E-5	1.9E-6	1.6E-6
F 22	6.0	2980	2.7E-4	7.2E-6	5.7E-6	0.0	2.9E-4	1.8E-5	7.7E-6	6.8E-6
F 30	6.8	2890	1.4E-4	4.5E-6	2.9E-6	0.0	1.5E-4	1.0E-5	3.9E-6	3.5E-6
G 15	8.7	3230	1.3E-4	5.6E-6	5.8E-6	0.0	1.4E-4	1.3E-5	6.8E-6	6.4E-6
G 20	3.2	2320	8.6E-5	2.9E-5	5.1E-6	0.0	1.2E-4	2.4E-5	5.9E-6	5.6E-6
H 11	3.4	1980	3.2E-5	1.5E-6	8.5E-6	0.0	4.2E-5	1.0E-5	8.7E-6	9.0E-6
I 09	5.9	2730	1.0E-4	3.7E-6	3.8E-4	0.0	4.8E-4	3.8E-4	3.8E-4	3.8E-4
I 18	7.8	1670	6.7E-5	3.5E-6	4.5E-5	4.3E-5	1.6E-4	9.2E-5	8.9E-5	8.9E-5
J 15	7.9	1550	1.4E-5	3.1E-6	3.3E-5	3.6E-5	8.6E-5	8.6E-5	6.9E-5	6.9E-5
J 16	8.9	2570	6.6E-6	2.8E-6	4.6E-5	3.4E-5	8.9E-5	8.9E-5	8.0E-5	8.0E-5
K 18	3.8	1280	4.9E-6	0.0	4.5E-5	2.3E-4	2.8E-4	2.7E-4	2.7E-4	2.7E-4
AVERAGES										
SPREADER, NO REINJ FROM D.C.			1.2E-4	1.8E-5	3.6E-6	0.0	1.5E-4	1.8E-5	4.6E-6	4.1E-6
MASS FIRED OVERFEED			3.4E-5	2.9E-6	7.9E-5	4.9E-5	1.7E-4	1.3E-4	1.3E-4	1.3E-4
HIGH			2.7E-4	5.5E-5	3.8E-4	2.3E-4	4.8E-4	3.8E-4	3.8E-4	3.8E-4
LOW			4.9E-6	1.5E-6	6.9E-7	3.4E-5	1.8E-5	3.5E-6	1.3E-7	2.7E-7

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

G/KG FUEL

URANIUM

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	2710	1.5E-5	2.5E-5	1.2E-6	4.5E-5	8.6E-5	6.6E-5	4.6E-5	4.6E-5
B 31	6.0	2670	3.1E-5	5.0E-5	1.3E-6	4.6E-5	1.3E-4	9.8E-5	4.8E-5	4.7E-5
B 33	6.1	2130	7.3E-5	1.3E-4	1.3E-6	5.0E-5	2.5E-4	1.5E-4	5.2E-5	5.1E-5
C 44	8.9	4380	1.5E-4	1.1E-5	2.6E-7	0.0	1.6E-4	2.2E-5	1.4E-6	5.1E-7
C 45	8.3	4360	7.1E-5	7.9E-6	2.6E-7	0.0	7.9E-5	1.2E-5	8.1E-7	3.8E-7
C 46	9.0	3230	9.1E-5	1.1E-5	4.0E-7	0.0	1.0E-4	1.7E-5	1.1E-6	5.5E-7
AVERAGE			7.2E-5	3.8E-5	8.0E-7	2.3E-5	1.3E-4	5.9E-5	2.5E-5	2.4E-5
HIGH			1.5E-4	1.3E-4	1.3E-6	5.0E-5	2.5E-4	1.5E-4	5.2E-5	5.1E-5
LOW			1.5E-5	7.9E-6	2.6E-7	4.5E-5	7.9E-5	1.2E-5	8.1E-7	3.8E-7

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	INPUT NG/J TOTAL ASH	*- - - E M I S S I O N S - G/KG FUEL * 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	2070	2.4E-5	5.2E-5	0.0	0.0	7.6E-5	2.9E-5	5.3E-7	1.1E-6
E 16	8.3	2760	7.7E-5	9.1E-5	3.1E-7	0.0	1.7E-4	5.3E-5	1.5E-6	1.0E-6
E 17	6.2	2770	3.7E-5	7.4E-5	4.1E-7	0.0	1.1E-4	4.2E-5	1.2E-6	8.5E-7
F 22	6.0	2980	2.7E-4	7.2E-5	2.9E-6	0.0	3.5E-4	5.1E-5	5.3E-6	4.2E-6
F 30	6.6	2890	1.4E-4	9.0E-6	1.2E-6	0.0	1.5E-4	1.1E-5	2.2E-6	1.8E-6
G 15	8.7	3210	6.3E-5	5.6E-5	2.9E-6	0.0	1.2E-4	3.6E-5	3.8E-6	3.4E-6
G 20	9.2	2320	8.6E-5	2.0E-4	2.5E-6	0.0	2.8E-4	1.1E-4	4.5E-6	3.7E-6
H 11	9.4	1980	3.2E-5	1.1E-5	3.4E-6	0.0	4.7E-5	1.1E-5	3.7E-6	4.0E-6
I 39	5.9	2700	1.0E-4	2.2E-5	1.9E-4	0.0	3.1E-4	2.0E-4	1.9E-4	1.9E-4
I 18	7.8	1670	2.0E-4	3.5E-5	2.3E-5	2.1E-5	2.8E-4	7.0E-5	4.6E-5	4.8E-5
J 15	7.9	1530	5.7E-6	3.1E-5	1.4E-5	1.8E-5	6.8E-5	6.8E-5	3.2E-5	3.2E-5
J 16	8.9	2570	6.6E-6	1.7E-5	2.3E-5	1.7E-5	6.3E-5	6.3E-5	4.3E-5	4.3E-5
K 18	3.8	1280	4.9E-6	0.0	2.3E-5	1.1E-4	1.4E-4	1.4E-4	1.4E-4	1.4E-4
AVERAGES										
SPREADER, NO REINJ FROM D.C.			1.1E-4	8.3E-5	1.7E-6	0.0	2.0E-4	5.1E-5	3.1E-6	2.5E-6
MASS FIRED OVERFEED			5.4E-5	2.4E-5	3.9E-5	2.4E-5	1.4E-4	8.3E-5	6.4E-5	6.5E-5
HIGH			2.7E-4	2.0E-4	1.9E-4	1.1E-4	3.5E-4	2.0E-4	1.9E-4	1.9E-4
LOW			4.9E-6	9.0E-6	3.1E-7	1.7E-5	4.7E-5	1.1E-5	5.3E-7	8.5E-7

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

G/KG FUEL

PHENANTHRENE

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	EMISSIONS G/KG FUEL: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
A 27	4.2	20.0	14500	5.9E-7	1.1E-5	3.5E-7	7.0E-7	2.2E-5	3.5E-5	3.1E-5	2.3E-5	2.3E-5
A 46	6.9	28.0	14300	0.0	2.5E-6	2.8E-7	7.4E-9	1.9E-6	4.7E-6	4.1E-6	2.2E-6	2.2E-6
B 30	6.0	10.0	10600	2.5E-5	6.7E-7	2.5E-6	1.2E-4	1.7E-6	1.5E-4	1.3E-4	1.2E-4	1.2E-4
B 31	6.0	9.0	11200	2.1E-5	8.6E-7	2.2E-6	9.5E-6	2.2E-6	3.6E-5	1.6E-5	1.4E-5	1.4E-5
B 33	6.1	8.0	11100	2.2E-5	2.6E-6	1.8E-6	1.1E-4	0.0	1.4E-4	1.2E-4	1.2E-4	1.2E-4
C 44	8.9	16.0	15000	1.3E-7	1.3E-7	2.4E-7	4.5E-5	2.9E-7	4.5E-5	4.5E-5	4.5E-5	4.5E-5
C 45	8.3	15.0	14500	1.3E-7	1.3E-7	2.9E-7	1.0E-4	1.6E-7	1.0E-4	1.0E-4	1.0E-4	1.0E-4
C 46	9.0	16.0	11900	2.4E-7	2.0E-7	2.8E-7	1.2E-5	6.0E-7	1.3E-5	1.3E-5	1.3E-5	1.3E-5
AVERAGE				8.8E-6	2.3E-6	1.0E-6	5.0E-5	3.6E-6	6.6E-5	5.7E-5	5.5E-5	5.5E-5
HIGH				2.5E-5	1.1E-5	2.5E-6	1.2E-4	2.2E-5	1.5E-4	1.3E-4	1.2E-4	1.2E-4
LOW				1.3E-7	1.3E-7	2.4E-7	7.4E-9	1.6E-7	4.7E-6	4.1E-6	2.2E-6	2.2E-6

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	EMISSIONS G/KG FUEL: 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	12.2	4.1	12000	2.3E-7	2.8E-7	0.0	4.7E-4	5.1E-6	4.7E-4	4.7E-4	4.7E-4	4.7E-4
E 16	8.3	13.5	11700	3.5E-7	9.0E-7	1.7E-7	1.4E-5	5.2E-7	1.6E-5	1.5E-5	1.5E-5	1.5E-5
E 17	6.2	12.4	11600	7.3E-7	6.5E-7	2.0E-7	1.8E-5	2.4E-7	2.0E-5	1.9E-5	1.8E-5	1.8E-5
F 22	6.0	10.9	7400	7.1E-7	1.6E-6	2.7E-6	3.1E-6	1.4E-6	1.0E-5	8.1E-6	7.2E-6	7.2E-6
F 30	6.8	12.3	8000	6.9E-7	4.1E-7	2.9E-7	2.1E-4	2.9E-7	2.2E-4	2.2E-4	2.2E-4	2.2E-4
G 15	8.7	15.2	11900	2.2E-7	2.6E-7	2.2E-7	3.4E-6	1.2E-6	5.2E-6	4.9E-6	4.8E-6	4.8E-6
G 20	9.2	9.6	12200	2.2E-7	3.0E-7	2.2E-7	1.3E-6	9.1E-7	2.9E-6	2.5E-6	2.4E-6	2.4E-6
H 11	3.4	6.8	13500	4.2E-7	1.7E-7	2.1E-7	2.5E-7	4.7E-7	1.5E-6	1.0E-6	9.4E-7	9.4E-7
I 09	5.9	10.1	12300	2.8E-7	2.4E-7	2.4E-7	3.4E-6	2.1E-6	6.3E-6	5.9E-6	5.7E-6	5.7E-6
I 18	7.8	4.7	12100	2.8E-7	2.8E-7	2.8E-7	4.2E-6	1.0E-6	6.0E-6	5.6E-6	5.5E-6	5.5E-6
J 15	7.9	3.0	12200	2.4E-7	4.7E-7	2.4E-7	2.5E-5	7.5E-7	2.7E-5	2.7E-5	2.6E-5	2.6E-5
J 16	8.9	8.2	12600	2.3E-7	2.3E-7	2.3E-7	1.0E-5	7.7E-7	1.2E-5	1.2E-5	1.1E-5	1.1E-5
K 18	9.8	6.0	12200	0.0	5.9E-7	0.0	1.5E-6	2.7E-7	2.4E-6	2.1E-6	1.8E-6	1.8E-6
AVERAGES												
SPREADER, NO REINJ FROM D.C.				4.9E-7	7.5E-7	6.4E-7	4.2E-5	7.6E-7	4.5E-5	4.4E-5	4.4E-5	4.4E-5
MASS FIRED OVERFEED				2.4E-7	3.2E-7	1.7E-7	7.3E-5	1.5E-6	7.6E-5	7.5E-5	7.5E-5	7.5E-5
HIGH				7.3E-7	1.6E-6	2.7E-6	4.7E-4	5.1E-6	4.7E-4	4.7E-4	4.7E-4	4.7E-4
LOW				2.2E-7	1.7E-7	1.7E-7	2.5E-7	2.4E-7	1.5E-6	1.0E-6	9.4E-7	9.4E-7

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

G/KG FUEL

ANTHRACENE

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	*- - - E M I S S I O N S - G/KG FUEL - - - - -* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	13.0	10600	0.0	2.2E-7	0.0	2.1E-6	4.8E-7	2.7E-6	2.6E-6	2.5E-6	2.5E-6
B 31	6.0	9.0	11200	0.0	0.0	2.2E-7	1.1E-6	3.4E-7	1.7E-6	1.7E-6	1.7E-6	1.7E-6
B 33	6.1	8.0	11100	0.0	0.0	2.2E-7	2.3E-6	0.0	2.6E-6	2.6E-6	2.6E-6	2.6E-6
C 44	8.9	16.0	15000	0.0	0.0	0.0	3.0E-6	0.0	3.0E-6	3.0E-6	3.0E-6	3.0E-6
C 45	8.3	15.0	14500	0.0	0.0	0.0	1.9E-7	0.0	1.9E-7	1.9E-7	1.9E-7	1.9E-7
C 46	9.0	16.0	11900	0.0	0.0	0.0	1.8E-6	2.0E-7	2.0E-6	2.0E-6	2.0E-6	2.0E-6
AVERAGE				0.0	3.7E-8	7.3E-8	1.7E-6	1.6E-7	2.0E-6	2.0E-6	2.0E-6	2.0E-6
HIGH					2.2E-7	2.2E-7	3.0E-6	4.0E-7	3.0E-6	3.0E-6	3.0E-6	3.0E-6
LOW					2.2E-7	2.2E-7	1.9E-7	2.0E-7	1.9E-7	1.9E-7	1.9E-7	1.9E-7

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SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	*- - - E M I S S I O N S - G/KG FUEL - - - - -* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	4.1	12000	2.3E-7	2.3E-7	0.0	4.7E-4	2.8E-7	4.7E-4	4.7E-4	4.7E-4	4.7E-4
E 16	8.3	13.5	11700	3.5E-7	3.5E-7	1.7E-7	3.5E-7	1.7E-7	1.4E-6	8.9E-7	7.0E-7	6.9E-7
E 17	6.2	12.4	11600	4.1E-7	4.1E-7	2.0E-7	3.7E-7	2.0E-7	1.6E-6	1.0E-6	7.8E-7	7.7E-7
F 22	6.0	10.9	7400	7.1E-7	7.1E-7	0.0	1.2E-6	3.6E-7	3.0E-6	2.0E-6	1.6E-6	1.6E-6
F 30	6.8	12.3	8000	5.8E-7	5.8E-7	2.9E-7	0.0	2.9E-7	1.7E-6	9.1E-7	5.8E-7	5.8E-7
G 15	8.7	15.2	11900	0.0	0.0	0.0	5.6E-7	2.2E-7	7.8E-7	7.8E-7	7.8E-7	7.8E-7
G 20	9.2	9.6	12200	0.0	2.2E-7	0.0	3.5E-7	2.2E-7	7.8E-7	6.8E-7	5.6E-7	5.6E-7
H 11	9.4	6.8	13500	4.2E-7	2.1E-7	2.1E-7	2.1E-7	2.1E-7	1.3E-6	7.6E-7	6.4E-7	6.4E-7
I 09	5.9	16.1	12300	0.0	0.0	0.0	7.1E-7	2.4E-7	9.4E-7	9.4E-7	9.4E-7	9.4E-7
I 18	7.8	4.7	12100	0.0	0.0	0.0	1.1E-6	2.8E-7	1.4E-6	1.4E-6	1.4E-6	1.4E-6
J 15	7.9	3.0	12200	2.4E-7	2.4E-7	0.0	1.8E-6	3.8E-7	2.7E-6	2.7E-6	2.2E-6	2.2E-6
J 16	8.9	8.2	12600	0.0	0.0	0.0	2.4E-6	2.3E-7	2.6E-6	2.6E-6	2.6E-6	2.6E-6
K 18	9.8	6.0	12200	0.0	2.3E-7	0.0	2.7E-7	0.0	5.0E-7	4.0E-7	2.7E-7	2.8E-7
AVERAGES												
SPREADER,NO REINJ FROM D.C.				3.4E-7	3.8E-7	1.1E-7	4.7E-7	2.4E-7	1.5E-6	1.0E-6	8.3E-7	8.3E-7
MASS FIRED OVERFEED				1.3E-7	1.3E-7	3.0E-8	6.8E-5	2.3E-7	6.8E-5	6.8E-5	5.8E-5	6.8E-5
HIGH				7.1E-7	7.1E-7	2.9E-7	4.7E-4	3.8E-7	4.7E-4	4.7E-4	4.7E-4	4.7E-4
LOW				2.3E-7	2.1E-7	1.7E-7	2.1E-7	1.7E-7	5.0E-7	4.0E-7	2.7E-7	2.8E-7

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

G/KG FUEL

METHYLANTHRACENES/PHENANTHRENES

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	*- - - EMISSIONS - G/KG FUEL - - - - -* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
A 27	4.2	20.0	14500	0.0	1.4E-6	0.0	4.5E-8	1.9E-6	3.3E-6	3.0E-6	2.0E-6	1.9E-6
A 43	6.9	28.0	14300	0.0	3.6E-7	5.2E-7	0.0	5.0E-7	1.4E-6	1.3E-6	1.0E-6	1.0E-6
B 33	6.0	10.0	10600	5.8E-6	2.2E-7	2.2E-7	0.0	0.0	6.2E-6	9.0E-7	2.7E-7	2.3E-7
B 31	6.0	9.0	11200	3.4E-6	0.0	1.1E-6	7.3E-7	4.3E-7	5.7E-6	2.6E-6	2.3E-6	2.3E-6
B 33	6.1	8.0	11100	3.3E-6	0.0	6.6E-7	0.0	0.0	3.9E-6	9.5E-7	6.8E-7	6.7E-7
C 44	8.9	16.0	15000	0.0	0.0	1.3E-7	8.9E-6	1.3E-7	9.1E-6	9.1E-6	9.1E-6	9.1E-6
C 45	8.3	15.0	14500	0.0	0.0	2.9E-7	0.0	0.0	2.9E-7	2.9E-7	2.9E-7	2.9E-7
C 46	9.0	16.0	11900	0.0	0.0	2.3E-7	5.0E-6	2.8E-7	5.5E-6	5.5E-6	5.5E-6	5.5E-6
AVERAGE				1.6E-6	2.5E-7	3.9E-7	1.8E-6	4.1E-7	4.4E-6	3.0E-6	2.6E-6	2.6E-6
HIGH				5.8E-6	1.4E-6	1.1E-6	8.9E-6	1.9E-6	9.1E-6	9.1E-6	9.1E-6	9.1E-6
LOW				3.3E-6	2.2E-7	1.3E-7	4.5E-8	1.3E-7	2.9E-7	2.9E-7	2.7E-7	2.3E-7

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	*- - - EMISSIONS - G/KG FUEL - - - - -* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	4.1	12600	0.0	0.0	0.0	1.5E-5	2.8E-6	1.8E-5	1.8E-5	1.8E-5	1.8E-5
E 16	6.3	13.5	11700	0.0	4.1E-7	1.7E-7	3.8E-6	3.1E-7	4.7E-6	4.5E-6	4.3E-6	4.3E-6
E 17	6.2	12.4	11600	0.0	0.0	0.0	5.3E-6	0.0	5.3E-6	5.3E-6	5.3E-6	5.3E-6
F 22	6.0	10.9	7400	0.0	8.6E-7	0.0	2.4E-6	1.2E-6	4.4E-6	4.0E-6	3.6E-6	3.6E-6
F 33	6.8	12.3	8000	0.0	0.0	0.0	1.1E-4	0.0	1.1E-4	1.1E-4	1.1E-4	1.1E-4
G 15	8.7	15.2	11900	2.2E-7	2.2E-7	2.2E-7	1.3E-6	5.2E-7	2.5E-6	2.2E-6	2.1E-6	2.1E-6
G 20	9.2	9.6	12200	0.0	2.2E-7	0.0	5.2E-7	4.3E-7	1.2E-6	1.1E-6	1.0E-6	1.0E-6
I 09	5.9	10.1	12300	2.4E-7	0.0	2.4E-7	7.1E-7	1.2E-6	2.4E-6	2.1E-6	2.1E-6	2.1E-6
I 18	7.8	4.7	12100	2.8E-7	2.8E-7	2.8E-7	1.5E-6	5.1E-7	2.9E-6	2.5E-6	2.3E-6	2.3E-6
J 15	7.9	3.0	12200	2.4E-7	2.4E-7	2.4E-7	8.5E-6	6.1E-7	1.0E-5	1.0E-5	9.3E-6	9.3E-6
J 16	8.9	6.2	12600	2.3E-7	2.3E-7	2.3E-7	5.0E-6	5.5E-7	6.2E-6	6.2E-6	5.8E-6	5.8E-6
K 18	9.8	6.0	12200	0.0	2.3E-7	0.0	1.4E-6	2.3E-7	1.9E-6	1.8E-6	1.6E-6	1.6E-6
AVERAGES												
SPREADER, NO REINJ FROM D.C.				3.6E-8	2.8E-7	6.5E-8	2.8E-5	4.1E-7	2.1E-5	2.1E-5	2.1E-5	2.1E-5
MASS FIRED OVERFEED				1.6E-7	1.6E-7	1.6E-7	5.4E-6	1.0E-6	6.9E-6	6.8E-6	6.5E-6	6.6E-6
HIGH				2.8E-7	8.6E-7	2.8E-7	1.1E-4	2.8E-6	1.1E-4	1.1E-4	1.1E-4	1.1E-4
LOW				2.2E-7	2.2E-7	1.7E-7	5.2E-7	2.3E-7	1.2E-6	1.1E-6	1.0E-6	1.0E-6

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

G/KG FUEL

FLUORANTHENE

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	EMISSIONS - G/KG FUEL: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
A 27	4.2	26.0	14500	2.2E-7	4.7E-6	1.3E-6	4.9E-7	1.8E-6	7.8E-6	6.4E-6	2.9E-6	2.8E-6
A 40	6.9	26.0	14300	0.0	8.0E-8	1.2E-7	0.0	2.2E-7	4.1E-7	3.9E-7	3.3E-7	3.3E-7
B 30	6.0	10.0	10600	3.4E-5	2.2E-7	2.2E-7	1.3E-6	4.5E-7	3.6E-5	5.2E-6	2.2E-6	2.1E-6
B 31	6.0	9.0	11200	1.3E-5	0.0	2.7E-6	1.0E-5	1.3E-6	2.7E-5	1.6E-5	1.4E-5	1.4E-5
B 33	6.1	8.0	11100	2.6E-5	2.6E-7	2.1E-6	4.4E-7	2.5E-6	3.1E-5	7.4E-6	5.2E-6	5.0E-6
C 44	8.9	16.0	15000	1.3E-7	1.3E-7	1.3E-7	2.6E-5	1.3E-7	2.7E-5	2.6E-5	2.6E-5	2.6E-5
C 45	8.3	15.0	14500	1.3E-7	1.3E-7	1.3E-7	4.8E-6	1.3E-7	5.3E-6	5.1E-6	5.0E-6	5.0E-6
C 46	9.0	16.0	11900	2.0E-7	2.0E-7	2.4E-7	5.6E-6	2.4E-7	6.4E-6	6.2E-6	6.0E-6	6.0E-6
AVERAGE				9.1E-6	7.2E-7	8.7E-7	6.1E-6	7.5E-7	1.8E-5	9.1E-6	7.8E-6	7.7E-6
HIGH				3.4E-5	4.7E-6	2.7E-6	2.6E-5	2.5E-6	3.6E-5	2.6E-5	2.6E-5	2.6E-5
LOW				1.3E-7	8.0E-8	1.2E-7	4.4E-7	1.3E-7	4.1E-7	3.9E-7	3.3E-7	3.3E-7

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	EMISSIONS - G/KG FUEL: 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	13.2	4.1	12000	2.3E-7	2.3E-7	5.6E-7	4.7E-4	8.0E-7	4.7E-4	4.7E-4	4.7E-4	4.7E-4
E 16	8.3	13.5	11700	3.5E-7	3.5E-7	1.7E-7	1.6E-6	2.4E-7	2.7E-6	2.2E-6	2.0E-6	2.0E-6
E 17	6.2	12.4	11600	4.1E-7	4.1E-7	2.0E-7	2.6E-6	2.0E-7	3.8E-6	3.2E-6	3.0E-6	3.0E-6
F 22	6.0	16.9	7400	7.1E-7	7.1E-7	3.6E-7	1.1E-6	7.9E-7	3.7E-6	2.7E-6	2.3E-6	2.3E-6
F 30	6.8	12.3	8000	5.8E-7	5.8E-7	0.0	4.6E-5	2.9E-7	4.8E-5	4.7E-5	4.7E-5	4.7E-5
G 15	8.7	15.2	11900	0.0	0.0	0.0	6.1E-7	2.2E-7	8.2E-7	8.2E-7	8.2E-7	8.2E-7
G 20	9.2	9.6	12200	2.2E-7	0.0	0.0	2.6E-7	2.2E-7	6.9E-7	4.8E-7	4.8E-7	4.8E-7
H 11	9.4	6.8	13500	4.2E-7	2.1E-7	2.1E-7	0.0	4.7E-7	1.3E-6	8.1E-7	6.8E-7	6.9E-7
I 09	5.9	10.1	12300	0.0	0.0	0.0	2.8E-7	2.4E-7	5.2E-7	5.2E-7	5.2E-7	5.2E-7
I 18	7.8	4.7	12100	0.0	0.0	0.0	1.4E-6	2.8E-7	1.6E-6	1.6E-6	1.6E-6	1.6E-6
J 15	7.9	3.0	12200	0.0	2.4E-7	0.0	5.2E-6	2.4E-7	5.6E-6	5.6E-6	5.4E-6	5.4E-6
J 16	8.9	8.2	12600	0.0	0.0	0.0	4.1E-6	2.3E-7	4.4E-6	4.4E-6	4.4E-6	4.4E-6
K 18	9.8	6.0	12200	2.3E-7	2.3E-7	2.3E-7	5.9E-7	2.3E-7	1.5E-6	1.2E-6	1.0E-6	1.0E-6
AVERAGES												
SPREADER, NO REINJ FROM D.C.				3.8E-7	3.4E-7	1.2E-7	8.8E-6	3.3E-7	1.8E-5	9.4E-6	9.2E-6	9.2E-6
MASS FIRED OVERFEED				1.3E-7	1.3E-7	1.4E-7	6.9E-5	3.5E-7	6.9E-5	6.9E-5	6.9E-5	6.9E-5
HIGH				7.1E-7	7.1E-7	5.6E-7	4.7E-4	8.0E-7	4.7E-4	4.7E-4	4.7E-4	4.7E-4
LOW				2.2E-7	2.1E-7	1.7E-7	2.6E-7	2.0E-7	5.2E-7	4.8E-7	4.8E-7	4.8E-7

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

G/KG FUEL

PYRENE

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	*- - - E M I S S I O N S - G/KG FUEL - - - - -* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
A 27	4.2	20.0	14500	5.8E-7	3.1E-6	3.9E-6	1.2E-6	9.4E-7	1.8E-5	8.4E-6	6.8E-6	6.8E-6
A 40	6.9	26.0	14300	0.0	6.2E-8	2.9E-7	0.0	2.8E-7	5.6E-7	5.4E-7	4.9E-7	4.9E-7
B 30	6.0	10.0	13600	4.5E-6	2.2E-7	2.2E-7	4.0E-7	2.2E-7	5.5E-6	1.4E-6	8.8E-7	8.5E-7
B 31	6.8	9.8	11200	3.5E-6	0.0	1.8E-6	2.1E-6	2.2E-6	1.0E-5	6.3E-6	6.0E-6	6.0E-6
B 33	6.1	8.0	11100	6.6E-6	2.2E-7	1.3E-6	4.0E-7	2.2E-7	8.8E-6	2.7E-6	2.0E-6	1.9E-6
C 44	8.9	16.0	15000	1.3E-7	1.3E-7	1.3E-7	7.8E-6	1.3E-7	7.5E-6	7.4E-6	7.3E-6	7.3E-6
C 45	8.3	15.0	14500	1.3E-7	1.3E-7	0.0	7.9E-8	1.3E-7	4.8E-7	3.2E-7	2.1E-7	2.1E-7
C 46	9.0	16.0	11900	0.0	2.0E-7	2.0E-7	5.0E-6	2.8E-7	5.7E-6	5.7E-6	5.5E-6	5.5E-6
AVERAGE				1.9E-6	5.1E-7	1.0E-6	2.0E-6	5.4E-7	6.0E-6	4.1E-6	3.6E-6	3.5E-6
HIGH				6.6E-6	3.1E-6	3.9E-6	7.0E-6	2.2E-6	1.0E-5	8.4E-6	7.3E-6	7.3E-6
LOW				1.3E-7	6.2E-8	1.3E-7	7.9E-8	1.3E-7	4.8E-7	3.2E-7	2.1E-7	2.1E-7

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	*- - - E M I S S I O N S - G/KG FUEL - - - - -* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	11.2	4.1	12000	2.3E-7	2.3E-7	0.0	3.6E-6	1.5E-6	5.6E-6	5.3E-6	5.2E-6	5.2E-6
E 16	6.3	13.5	11700	4.8E-7	3.5E-7	1.7E-7	1.5E-6	3.8E-7	2.9E-6	2.3E-6	2.1E-6	2.1E-6
E 17	6.2	12.4	11600	4.1E-7	4.1E-7	2.0E-7	1.9E-6	2.0E-7	3.1E-6	2.5E-6	2.3E-6	2.3E-6
F 22	6.0	10.9	7400	7.1E-7	7.1E-7	0.0	1.6E-6	1.9E-6	4.9E-6	3.9E-6	3.5E-6	3.5E-6
F 30	6.8	12.3	8000	5.8E-7	5.8E-7	2.9E-7	2.1E-6	2.9E-7	3.9E-6	3.0E-6	2.7E-6	2.7E-6
G 15	8.7	15.2	11900	0.0	0.0	0.0	4.3E-7	2.2E-7	6.5E-7	6.5E-7	6.5E-7	6.5E-7
G 20	9.2	9.6	12200	0.0	0.0	0.0	2.6E-7	2.2E-7	4.8E-7	4.8E-7	4.8E-7	4.8E-7
H 11	3.4	6.8	13500	4.2E-7	2.1E-7	2.1E-7	0.0	4.7E-7	1.3E-6	8.1E-7	6.8E-7	6.9E-7
I 09	5.9	16.1	12300	0.0	0.0	0.0	6.1E-7	7.1E-7	1.3E-6	1.3E-6	1.3E-6	1.3E-6
I 18	7.8	4.7	12100	0.0	0.0	0.0	1.2E-6	2.8E-7	1.5E-6	1.5E-6	1.5E-6	1.5E-6
J 15	7.9	3.0	12200	0.0	0.0	0.0	5.2E-6	4.2E-7	5.6E-6	5.6E-6	5.6E-6	5.6E-6
J 16	8.9	8.2	12600	0.0	0.0	0.0	3.0E-6	2.7E-7	3.2E-6	3.2E-6	3.2E-6	3.2E-6
K 18	9.8	6.0	12200	2.3E-7	2.3E-7	2.3E-7	1.4E-6	2.3E-7	2.3E-6	1.9E-6	1.8E-6	1.8E-6
AVERAGES												
SPREADER, NO REINJ FROM D.C.				3.6E-7	3.4E-7	1.1E-7	1.3E-6	5.3E-7	2.6E-6	2.1E-6	2.0E-6	1.9E-6
MASS FIRED OVERFEED				1.3E-7	1.0E-7	6.3E-8	2.1E-6	5.6E-7	3.0E-6	2.8E-6	2.8E-6	2.8E-6
HIGH				7.1E-7	7.1E-7	2.9E-7	5.2E-6	1.9E-6	5.6E-6	5.6E-6	5.6E-6	5.6E-6
LOW				2.3E-7	2.3E-7	1.7E-7	2.6E-7	2.0E-7	4.8E-7	4.8E-7	4.8E-7	4.8E-7

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

G/KG FUEL

METHYLPYRENE/FLUORANTHENE

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES MG/J	*- - - EMISSIONS - G/KG FUEL - - - -* 10 UM + 3 UM CYCLONE	1 UM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	10.0	10600	3.6E-6	0.0	0.0	1.5E-6	0.0	5.1E-6	1.8E-6	1.5E-6	1.5E-6
B 31	6.0	9.0	11200	0.0	0.0	0.0	2.6E-7	0.0	2.6E-7	2.6E-7	2.6E-7	2.6E-7
C 44	8.9	16.0	15000	1.3E-7	1.3E-7	0.0	4.5E-7	1.3E-7	8.4E-7	6.9E-7	5.8E-7	5.8E-7
C 45	8.3	15.0	14500	1.3E-7	0.0	1.3E-7	0.0	1.3E-7	4.0E-7	2.8E-7	2.7E-7	2.6E-7
C 46	9.0	16.0	11900	2.0E-7	2.0E-7	2.0E-7	2.0E-7	2.0E-7	1.0E-6	7.6E-7	6.0E-7	6.0E-7
AVERAGE				8.1E-7	6.6E-8	6.6E-8	4.8E-7	9.2E-8	1.5E-6	7.6E-7	6.5E-7	6.4E-7
HIGH				3.6E-6	2.0E-7	2.0E-7	1.5E-6	2.0E-7	5.1E-6	1.8E-6	1.5E-6	1.5E-6
LOW				1.3E-7	1.3E-7	1.3E-7	2.0E-7	1.3E-7	2.6E-7	2.6E-7	2.6E-7	2.6E-7

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES MG/J	*- - - EMISSIONS - G/KG FUEL - - - -* 18.5 UM +5.9 UM CYCLONE	1.4 UM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	4.1	12000	0.0	0.0	0.0	9.4E-7	2.8E-7	1.2E-6	1.2E-6	1.2E-6	1.2E-6
E 16	8.3	13.5	11700	0.0	3.5E-7	0.0	4.1E-7	1.7E-7	9.3E-7	7.8E-7	5.9E-7	5.9E-7
E 17	9.2	12.4	11600	0.0	4.1E-7	0.0	8.1E-7	0.0	1.2E-6	1.0E-6	8.1E-7	8.1E-7
F 22	6.0	10.9	7400	0.0	7.1E-7	0.0	5.7E-7	0.0	1.3E-6	1.0E-6	5.8E-7	5.7E-7
F 30	6.8	12.3	6000	0.0	0.0	0.0	7.2E-6	2.9E-7	7.5E-6	7.5E-6	7.5E-6	7.5E-6
G 15	8.7	15.2	11900	0.0	0.0	0.0	2.2E-7	2.2E-7	4.3E-7	4.3E-7	4.3E-7	4.3E-7
G 20	9.2	9.6	12200	0.0	0.0	0.0	2.2E-7	2.2E-7	4.3E-7	4.3E-7	4.3E-7	4.3E-7
H 11	9.4	6.8	13500	0.0	4.2E-7	0.0	0.0	0.0	4.2E-7	2.3E-7	3.0E-9	6.3E-9
I 09	5.9	10.1	12300	0.0	0.0	0.0	2.4E-7	2.4E-7	4.7E-7	4.7E-7	4.7E-7	4.7E-7
I 18	7.8	4.7	12100	0.0	0.0	0.0	2.8E-7	2.8E-7	5.7E-7	5.7E-7	5.7E-7	5.7E-7
J 15	7.9	3.0	12200	0.0	0.0	0.0	1.6E-6	2.4E-7	1.8E-6	1.8E-6	1.8E-6	1.8E-6
J 16	8.9	6.2	12600	0.0	0.0	0.0	1.8E-6	2.3E-7	2.0E-6	2.0E-6	2.0E-6	2.0E-6
K 18	9.8	6.0	12200	0.0	0.0	0.0	2.3E-7	0.0	2.3E-7	2.3E-7	2.3E-7	2.3E-7
AVERAGES												
SPREADER,NO REINJ FROM D.C.				0.0	2.4E-7	0.0	1.6E-6	1.5E-7	2.0E-6	1.9E-6	1.7E-6	1.7E-6
MASS FIRED OVERFEED				0.0	6.0E-8	0.0	7.2E-7	1.8E-7	1.0E-6	9.3E-7	9.0E-7	9.0E-7
HIGH					7.1E-7		7.2E-6	2.9E-7	7.5E-6	7.5E-6	7.5E-6	7.5E-6
LOW					3.5E-7		2.2E-7	1.7E-7	2.3E-7	2.3E-7	3.0E-9	6.3E-9

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

G/KG FUEL

BENZO(C)PHENANTHRENE

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	*- - - E M I S S I O N S - G/KG FUEL - - - - -* 10 UM + 3 UM CYCLONE	1 UM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	10.0	10600	2.2E-7	0.0	0.0	2.2E-7	0.0	4.5E-7	2.4E-7	2.2E-7	2.2E-7
B 31	6.6	9.0	11200	0.0	0.0	0.0	2.2E-7	0.0	2.2E-7	2.2E-7	2.2E-7	2.2E-7
B 33	6.1	8.0	11130	0.0	0.0	0.0	2.2E-7	2.2E-7	4.4E-7	4.4E-7	4.4E-7	4.4E-7
C 44	8.9	16.0	15000	1.3E-7	1.3E-7	1.3E-7	1.3E-7	1.3E-7	6.6E-7	5.0E-7	4.0E-7	3.9E-7
C 45	8.3	15.0	14500	1.3E-7	0.0	1.3E-7	0.0	0.0	2.6E-7	1.4E-7	1.3E-7	1.3E-7
C 46	9.0	16.0	11900	2.0E-7	0.0	2.0E-7	2.0E-7	2.0E-7	7.9E-7	6.1E-7	6.0E-7	6.0E-7
AVERAGE				1.1E-7	2.2E-8	7.7E-8	1.6E-7	9.2E-8	4.7E-7	3.6E-7	3.3E-7	3.3E-7
HIGH				2.2E-7	1.3E-7	2.0E-7	2.2E-7	2.2E-7	7.9E-7	6.1E-7	6.0E-7	6.0E-7
LOW				1.3E-7	1.3E-7	1.3E-7	1.3E-7	1.3E-7	2.2E-7	1.4E-7	1.3E-7	1.3E-7

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	*- - - E M I S S I O N S - G/KG FUEL - - - - -* 18.5 UM +5.9 UM CYCLONE	1.4 UM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
U 22	10.2	4.1	12000	2.3E-7	2.3E-7	0.0	2.3E-7	2.3E-7	9.4E-7	6.8E-7	4.7E-7	4.8E-7
E 16	8.3	13.5	11700	0.0	3.5E-7	0.0	1.7E-7	1.7E-7	6.9E-7	5.4E-7	3.5E-7	3.5E-7
E 17	6.2	12.4	11600	0.0	4.1E-7	0.0	2.0E-7	0.0	6.1E-7	4.3E-7	2.1E-7	2.0E-7
F 22	6.0	10.9	7400	0.0	0.0	0.0	3.6E-7	3.6E-7	7.1E-7	7.1E-7	7.1E-7	7.1E-7
F 33	6.6	12.3	8000	0.0	0.0	2.9E-7	0.0	0.0	2.9E-7	2.9E-7	2.9E-7	2.9E-7
H 11	9.4	6.8	13500	0.0	0.0	0.0	3.0E-7	2.1E-7	5.1E-7	5.1E-7	5.1E-7	5.1E-7
AVERAGES												
SPREADER,NO REINJ FROM D.C.				0.0	1.9E-7	7.2E-8	1.8E-7	1.3E-7	5.8E-7	4.9E-7	3.9E-7	3.9E-7
MASS FIRED OVERFEED				1.2E-7	1.2E-7	0.0	2.7E-7	2.2E-7	7.2E-7	5.6E-7	4.9E-7	4.9E-7
HIGH				2.3E-7	4.1E-7	2.9E-7	3.6E-7	3.6E-7	9.4E-7	7.1E-7	7.1E-7	7.1E-7
LOW				2.3E-7	2.3E-7	2.9E-7	1.7E-7	1.7E-7	2.9E-7	2.9E-7	2.1E-7	2.0E-7

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

G/KG FUEL

BENZ(A)ANTHRACENE

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	*- - - EMISSIONS - G/KG FUEL - - - - -* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	10.0	10600	2.2E-7	0.0	0.0	2.2E-7	0.0	4.5E-7	2.4E-7	2.2E-7	2.2E-7
B 31	6.0	9.0	11200	3.4E-7	0.0	2.2E-7	2.2E-7	2.2E-7	1.0E-6	6.8E-7	6.5E-7	6.5E-7
B 33	6.1	8.0	11100	0.0	2.2E-7	2.2E-7	0.0	2.6E-7	7.0E-7	6.5E-7	4.9E-7	4.8E-7
C 44	8.9	16.0	15000	1.3E-7	1.3E-7	1.3E-7	0.0	1.3E-7	5.3E-7	3.7E-7	2.6E-7	2.6E-7
C 45	8.3	15.0	14500	1.3E-7	1.3E-7	1.3E-7	1.3E-7	0.0	5.3E-7	3.8E-7	2.7E-7	2.6E-7
C 46	9.0	16.0	11900	2.0E-7	2.0E-7	2.0E-7	0.0	2.0E-7	7.9E-7	5.6E-7	4.0E-7	4.0E-7
AVERAGE				1.7E-7	1.1E-7	1.5E-7	1.0E-7	1.3E-7	6.6E-7	4.8E-7	3.8E-7	3.8E-7
HIGH				3.4E-7	2.2E-7	2.2E-7	2.2E-7	2.6E-7	1.0E-6	6.8E-7	6.5E-7	6.5E-7
LOW				1.3E-7	1.3E-7	1.3E-7	1.3E-7	1.3E-7	4.5E-7	2.4E-7	2.2E-7	2.2E-7

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	*- - - EMISSIONS - G/KG FUEL - - - - -* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	4.1	12000	2.3E-7	2.3E-7	0.0	5.6E-7	2.3E-7	1.3E-6	9.3E-7	8.8E-7	8.8E-7
E 16	5.3	13.5	11700	0.0	0.0	0.0	0.0	1.7E-7	1.7E-7	1.7E-7	1.7E-7	1.7E-7
E 17	6.2	12.4	11600	0.0	4.1E-7	0.0	2.0E-7	0.0	6.1E-7	4.3E-7	2.1E-7	2.0E-7
F 22	6.0	10.9	7400	0.0	0.0	0.0	3.6E-7	0.0	3.6E-7	3.6E-7	3.6E-7	3.6E-7
G 20	9.2	9.6	12200	0.0	0.0	0.0	2.2E-7	0.0	2.2E-7	2.2E-7	2.2E-7	2.2E-7
H 11	9.4	6.8	13500	0.0	0.0	0.0	0.0	2.1E-7	2.1E-7	2.1E-7	2.1E-7	2.1E-7
K 18	9.8	6.0	12200	0.0	0.0	0.0	2.3E-7	0.0	2.3E-7	2.3E-7	2.3E-7	2.3E-7
AVERAGES												
SPREADER,NO REINJ FROM D.C.				0.0	1.0E-7	0.0	1.9E-7	4.3E-8	3.4E-7	2.9E-7	2.4E-7	2.4E-7
MASS FIRED OVERFEED				7.8E-8	7.8E-8	0.0	2.6E-7	1.5E-7	5.7E-7	4.6E-7	4.1E-7	4.1E-7
HIGH				2.3E-7	4.1E-7		5.6E-7	2.3E-7	1.3E-6	9.3E-7	8.8E-7	8.8E-7
LOW				2.3E-7	2.3E-7		2.0E-7	1.7E-7	1.7E-7	1.7E-7	1.7E-7	1.7E-7

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

G/KG FUEL

CHRYSENE

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES MG/J	*- - - E M I S S I O N S - G/KG FUEL - - - - -* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.8	10.0	10600	2.2E-7	0.0	0.0	4.5E-7	0.0	6.7E-7	4.7E-7	4.5E-7	4.5E-7
B 31	6.0	9.0	11200	2.2E-7	0.0	4.7E-7	1.3E-7	2.2E-7	1.0E-6	8.4E-7	8.2E-7	8.2E-7
B 33	6.1	8.0	11100	0.0	0.0	3.1E-7	6.6E-7	5.3E-7	1.5E-6	1.5E-6	1.5E-6	1.5E-6
C 44	8.9	16.0	15000	1.3E-7	1.3E-7	1.3E-7	2.6E-7	1.3E-7	7.9E-7	6.4E-7	5.3E-7	5.3E-7
C 45	8.3	15.0	14500	1.3E-7	1.3E-7	1.3E-7	0.0	0.0	4.0E-7	2.4E-7	1.3E-7	1.3E-7
C 46	9.0	16.0	11900	2.0E-7	2.0E-7	3.2E-7	1.0E-6	4.0E-7	2.1E-6	1.9E-6	1.7E-6	1.7E-6
AVERAGE				1.5E-7	7.7E-8	2.3E-7	4.2E-7	2.1E-7	1.1E-6	9.3E-7	8.6E-7	8.5E-7
HIGH				2.2E-7	2.0E-7	4.7E-7	1.0E-6	5.3E-7	2.1E-6	1.9E-6	1.7E-6	1.7E-6
LOW				1.3E-7	1.3E-7	1.3E-7	1.3E-7	1.3E-7	4.0E-7	2.4E-7	1.3E-7	1.3E-7

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES MG/J	*- - - E M I S S I O N S - G/KG FUEL - - - - -* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	13.2	4.1	12000	2.3E-7	2.3E-7	0.0	1.2E-6	5.6E-7	2.2E-6	1.9E-6	1.7E-6	1.7E-6
E 16	4.3	13.5	11700	3.5E-7	0.0	1.7E-7	2.4E-7	1.7E-7	9.3E-7	6.0E-7	5.9E-7	5.9E-7
E 17	6.2	12.4	11600	4.1E-7	4.1E-7	2.0E-7	2.0E-7	2.0E-7	1.4E-6	8.4E-7	6.1E-7	6.1E-7
F 22	6.0	10.9	7400	0.0	7.1E-7	3.6E-7	4.3E-7	3.6E-7	1.9E-6	1.5E-6	1.1E-6	1.1E-6
F 30	6.9	12.3	8000	5.8E-7	5.8E-7	2.9E-7	5.8E-7	2.9E-7	2.3E-6	1.5E-6	1.2E-6	1.2E-6
G 15	4.7	15.2	11900	0.0	0.0	0.0	2.2E-7	0.0	2.2E-7	2.2E-7	2.2E-7	2.2E-7
G 20	9.2	9.6	12200	0.0	0.0	0.0	2.2E-7	0.0	2.2E-7	2.2E-7	2.2E-7	2.2E-7
H 11	3.4	6.8	13500	4.2E-7	2.1E-7	2.1E-7	8.5E-7	3.4E-7	2.0E-6	1.5E-6	1.4E-6	1.4E-6
I 18	7.8	4.7	12100	0.0	0.0	0.0	2.8E-7	0.0	2.8E-7	2.8E-7	2.8E-7	2.8E-7
J 15	7.9	3.8	12200	0.0	0.0	0.0	2.4E-7	2.4E-7	4.7E-7	4.7E-7	4.7E-7	4.7E-7
J 16	8.9	8.2	12600	0.0	0.0	0.0	2.3E-7	2.3E-7	4.6E-7	4.6E-7	4.6E-7	4.6E-7
K 14	9.8	6.0	12200	0.0	0.0	0.0	2.3E-7	0.0	2.3E-7	2.3E-7	2.3E-7	2.3E-7
AVERAGES												
SPREADER,NO REINJ FROM D.C.				2.2E-7	2.8E-7	1.7E-7	3.1E-7	1.7E-7	1.2E-6	8.2E-7	6.6E-7	6.6E-7
MASS FIRED OVERFEED				1.1E-7	7.4E-8	3.5E-8	5.8E-7	2.3E-7	9.4E-7	8.0E-7	7.6E-7	7.6E-7
HIGH				5.8E-7	7.1E-7	3.6E-7	1.2E-6	5.6E-7	2.3E-6	1.9E-6	1.7E-6	1.7E-6
LOW				2.3E-7	2.1E-7	1.7E-7	2.0E-7	1.7E-7	2.2E-7	2.2E-7	2.2E-7	2.2E-7

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

G/KG FUEL

METHYLCHRYSENES

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	*- - - E M I S S I O N S - G/KG FUEL - - - - -* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	10.0	10600	0.0	0.0	0.0	4.5E-7	0.0	4.5E-7	4.5E-7	4.5E-7	4.5E-7
B 31	6.0	9.0	11200	0.0	0.0	2.6E-7	3.0E-7	0.0	5.6E-7	5.6E-7	5.6E-7	5.6E-7
B 33	6.1	8.0	11100	0.0	0.0	2.2E-7	0.0	0.0	2.2E-7	2.2E-7	2.2E-7	2.2E-7
AVERAGE				0.0	0.0	1.6E-7	2.5E-7	0.0	4.1E-7	4.1E-7	4.1E-7	4.1E-7
HIGH						2.6E-7	4.5E-7		5.6E-7	5.6E-7	5.6E-7	5.6E-7
LOW						2.2E-7	3.0E-7		2.2E-7	2.2E-7	2.2E-7	2.2E-7

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	*- - - E M I S S I O N S - G/KG FUEL - - - - -* 10.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	13.2	4.1	12000	0.0	0.0	0.0	7.5E-7	2.3E-7	1.0E-6	1.0E-6	1.0E-6	1.0E-6
E 16	8.3	13.5	11700	0.0	0.0	0.0	1.7E-7	0.0	1.7E-7	1.7E-7	1.7E-7	1.7E-7
E 17	6.2	12.4	11600	0.0	0.0	0.0	2.0E-7	0.0	2.0E-7	2.0E-7	2.0E-7	2.0E-7
F 22	6.0	10.9	7400	0.0	7.1E-7	0.0	4.3E-7	0.0	1.1E-6	8.2E-7	4.3E-7	4.3E-7
F 30	6.6	12.3	8000	0.0	0.0	2.9E-7	5.2E-7	0.0	8.1E-7	8.1E-7	8.1E-7	8.1E-7
G 15	6.7	15.2	11900	0.0	0.0	0.0	2.2E-7	0.0	2.2E-7	2.2E-7	2.2E-7	2.2E-7
G 20	9.2	9.6	12200	0.0	0.0	0.0	2.2E-7	0.0	2.2E-7	2.2E-7	2.2E-7	2.2E-7
H 11	9.4	6.8	13500	0.0	4.2E-7	0.0	0.0	2.1E-7	6.3E-7	4.4E-7	2.1E-7	2.2E-7
J 15	7.9	3.0	12200	0.0	0.0	0.0	2.4E-7	0.0	2.4E-7	2.4E-7	2.4E-7	2.4E-7
J 16	8.9	8.2	12600	0.0	0.0	0.0	2.3E-7	0.0	2.3E-7	2.3E-7	2.3E-7	2.3E-7
K 18	9.8	6.8	12200	0.0	0.0	0.0	2.3E-7	0.0	2.3E-7	2.3E-7	2.3E-7	2.3E-7
AVERAGES												
SPREADER,NO REINJ FROM D.C.				0.0	1.2E-7	4.8E-8	2.9E-7	0.0	4.6E-7	4.1E-7	3.4E-7	3.4E-7
MASS FIRED OVERFEED				0.0	8.5E-8	0.0	2.9E-7	8.9E-8	4.6E-7	4.2E-7	3.8E-7	3.8E-7
HIGH					7.1E-7	2.9E-7	7.5E-7	2.3E-7	1.1E-6	1.0E-6	1.0E-6	1.0E-6
LOW					4.2E-7	2.9E-7	1.7E-7	2.1E-7	1.7E-7	1.7E-7	1.7E-7	1.7E-7

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

G/KG FUEL

DIMETHYLBENZANTHRACENES

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	*- - - E M I S S I O N S - G/KG FUEL - - - - -* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 3D	6.0	10.0	10600	0.0	0.0	0.0	2.2E-7	0.0	2.2E-7	2.2E-7	2.2E-7	2.2E-7

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

G/KG FUEL

BENZOFLUORANTHENES

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES MG/J	*- - - E M I S S I O N S - G/KG FUEL - - - - -* 10 UM + 3 UM CYCLONE	1 UM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	10.0	18600	0.0	0.0	0.0	2.2E-7	0.0	2.2E-7	2.2E-7	2.2E-7	2.2E-7
B 33	6.1	6.0	11100	0.0	0.0	2.2E-7	2.2E-7	0.0	4.4E-7	4.4E-7	4.4E-7	4.4E-7
C 44	8.9	16.0	15000	0.0	0.0	0.0	1.3E-7	7.9E-7	9.2E-7	9.2E-7	9.2E-7	9.2E-7
C 45	8.3	15.0	14500	0.0	0.0	0.0	1.3E-7	2.1E-7	3.4E-7	3.4E-7	3.4E-7	3.4E-7
C 46	9.0	16.0	11900	0.0	0.0	0.0	0.0	2.5E-6	2.5E-6	2.5E-6	2.5E-6	2.5E-6
AVERAGE				0.0	0.0	4.4E-8	1.4E-7	7.1E-7	8.9E-7	8.9E-7	8.9E-7	8.9E-7
HIGH						2.2E-7	2.2E-7	2.5E-6	2.5E-6	2.5E-6	2.5E-6	2.5E-6
LOW						2.2E-7	1.3E-7	2.1E-7	2.2E-7	2.2E-7	2.2E-7	2.2E-7

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES MG/J	*- - - E M I S S I O N S - G/KG FUEL - - - - -* 10.5 UM +5.9 UM CYCLONE	1.4 UM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	13.2	4.1	17000	0.0	2.3E-7	0.0	8.9E-7	9.4E-7	2.1E-6	2.0E-6	1.8E-6	1.8E-6
E 17	6.2	12.4	11600	0.0	4.9E-7	0.0	0.0	0.0	4.9E-7	2.7E-7	3.4E-9	1.9E-9
F 22	6.0	10.9	7400	0.0	7.1E-7	0.0	4.3E-7	3.6E-7	1.5E-6	1.2E-6	7.9E-7	7.9E-7
G 15	4.7	15.2	11900	0.0	0.0	0.0	2.2E-7	0.0	2.2E-7	2.2E-7	2.2E-7	2.2E-7
G 23	4.2	4.6	12200	0.0	0.0	0.0	2.2E-7	0.0	2.2E-7	2.2E-7	2.2E-7	2.2E-7
H 11	9.4	6.8	13500	0.0	0.0	0.0	2.1E-7	5.5E-7	7.6E-7	7.6E-7	7.6E-7	7.6E-7
I 18	7.8	4.7	12100	0.0	0.0	0.0	2.8E-7	0.0	2.8E-7	2.8E-7	2.8E-7	2.8E-7
J 16	9.9	8.2	12600	0.0	0.0	0.0	2.3E-7	0.0	2.3E-7	2.3E-7	2.3E-7	2.3E-7
K 18	9.8	6.0	12200	0.0	0.0	0.0	2.3E-7	0.0	2.3E-7	2.3E-7	2.3E-7	2.3E-7
AVERAGES												
SPREADER,NO REINJ FROM D.C.				0.0	3.0E-7	0.0	2.2E-7	8.9E-8	6.0E-7	4.7E-7	3.1E-7	3.1E-7
MASS FIRED OVERFEED				0.0	4.7E-8	0.0	3.7E-7	3.0E-7	7.1E-7	6.9E-7	6.7E-7	6.7E-7
HIGH					7.1E-7		8.9E-7	9.4E-7	2.1E-6	2.0E-6	1.8E-6	1.8E-6
LOW					2.3E-7		2.1E-7	3.6E-7	2.2E-7	2.2E-7	3.4E-9	1.9E-9

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

G/KG FUEL

BENZO(E)PYRENE

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	*- - - EMISSIONS - G/KG FUEL - - - - -* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	10.0	10600	0.0	0.0	0.0	2.2E-7	0.0	2.2E-7	2.2E-7	2.2E-7	2.2E-7
B 33	6.1	8.0	11100	0.0	0.0	2.2E-7	2.2E-7	0.0	4.4E-7	4.4E-7	4.4E-7	4.4E-7
C 45	6.3	15.0	14500	0.0	0.0	0.0	1.3E-7	1.3E-7	2.6E-7	2.6E-7	2.6E-7	2.6E-7
AVERAGE				0.0	0.0	7.3E-8	1.9E-7	4.4E-8	3.1E-7	3.1E-7	3.1E-7	3.1E-7
HIGH						2.2E-7	2.2E-7	1.3E-7	4.4E-7	4.4E-7	4.4E-7	4.4E-7
LOW						2.2E-7	1.3E-7	1.3E-7	2.2E-7	2.2E-7	2.2E-7	2.2E-7

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	*- - - EMISSIONS - G/KG FUEL - - - - -* 18.5 µM 45.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
E 16	6.3	13.5	11700	0.0	0.0	0.0	1.7E-7	0.0	1.7E-7	1.7E-7	1.7E-7	1.7E-7
E 17	6.2	12.4	11600	0.0	0.0	0.0	2.0E-7	0.0	2.0E-7	2.0E-7	2.0E-7	2.0E-7
F 22	6.0	14.9	7400	0.0	7.1E-7	0.0	4.3E-7	0.0	1.1E-6	8.2E-7	4.3E-7	4.3E-7
H 11	9.4	6.8	13500	0.0	0.0	0.0	2.1E-7	5.5E-7	7.6E-7	7.6E-7	7.6E-7	7.6E-7
J 15	7.9	3.0	12200	0.0	0.0	0.0	2.4E-7	0.0	2.4E-7	2.4E-7	2.4E-7	2.4E-7
J 16	9.9	6.2	12600	0.0	0.0	0.0	2.3E-7	0.0	2.3E-7	2.3E-7	2.3E-7	2.3E-7
K 14	9.8	6.0	12200	0.0	0.0	0.0	2.3E-7	0.0	2.3E-7	2.3E-7	2.3E-7	2.3E-7
AVERAGES												
SPREADER,NO REINJ FROM D.C.				0.0	2.4E-7	0.0	2.7E-7	0.0	5.1E-7	4.0E-7	2.7E-7	2.7E-7
MASS FIRED OVERFEED				0.0	0.0	0.0	2.3E-7	1.4E-7	3.6E-7	3.6E-7	3.6E-7	3.6E-7
HIGH					7.1E-7		4.3E-7	5.5E-7	1.1E-6	8.2E-7	7.6E-7	7.6E-7
LOW					7.1E-7		1.7E-7	5.5E-7	1.7E-7	1.7E-7	1.7E-7	1.7E-7

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

G/KG FUEL

BENZO(A)PYRENE

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	*- - - E M I S S I O N S - G/KG FUEL - - - - -* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	10.0	10600	0.0	0.0	0.0	2.2E-7	0.0	2.2E-7	2.2E-7	2.2E-7	2.2E-7
B 33	6.1	8.0	11100	0.0	0.0	2.2E-7	2.2E-7	0.0	4.4E-7	4.4E-7	4.4E-7	4.4E-7
C 44	8.9	16.0	15000	0.0	1.3E-7	0.0	0.0	0.0	1.3E-7	1.0E-7	<1.0E-9	<1.0E-9
C 46	9.0	16.0	11900	0.0	0.0	2.0E-7	0.0	2.0E-7	4.0E-7	4.0E-7	4.0E-7	4.0E-7
AVERAGE				0.0	3.3E-8	1.0E-7	1.1E-7	5.0E-8	3.0E-7	2.9E-7	2.7E-7	2.7E-7
HIGH					1.3E-7	2.2E-7	2.2E-7	2.0E-7	4.4E-7	4.4E-7	4.4E-7	4.4E-7
LOW					1.3E-7	2.0E-7	2.2E-7	2.0E-7	1.3E-7	1.0E-7	<1.0E-9	<1.0E-9

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	*- - - E M I S S I O N S - G/KG FUEL - - - - -* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
E 16	8.3	13.5	11700	0.0	0.0	0.0	1.7E-7	0.0	1.7E-7	1.7E-7	1.7E-7	1.7E-7
H 11	9.4	6.8	13500	0.0	0.0	0.0	2.1E-7	2.1E-7	4.2E-7	4.2E-7	4.2E-7	4.2E-7
K 18	9.8	6.0	12200	0.0	0.0	0.0	2.3E-7	0.0	2.3E-7	2.3E-7	2.3E-7	2.3E-7
AVERAGES												
SPREADER,NO REINJ FROM D.C.				0.0	0.0	0.0	1.7E-7	0.0	1.7E-7	1.7E-7	1.7E-7	1.7E-7
MASS FIRED OVERFEED				0.0	0.0	0.0	2.2E-7	1.1E-7	3.2E-7	3.2E-7	3.2E-7	3.2E-7
HIGH							2.3E-7	2.1E-7	4.2E-7	4.2E-7	4.2E-7	4.2E-7
LOW							1.7E-7	2.1E-7	1.7E-7	1.7E-7	1.7E-7	1.7E-7

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

G/KG FUEL

PERYLENE

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	EMISSIONS - G/KG FUEL: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	10.0	10600	0.0	0.0	0.0	2.2E-7	0.0	2.2E-7	2.2E-7	2.2E-7	2.2E-7
B 33	6.1	8.0	11100	0.0	0.0	2.2E-7	2.2E-7	0.0	4.4E-7	4.4E-7	4.4E-7	4.4E-7
C 44	6.9	16.0	15000	0.0	0.0	0.0	0.0	1.3E-7	1.3E-7	1.3E-7	1.3E-7	1.3E-7
AVERAGE				0.0	0.0	7.3E-8	1.5E-7	4.4E-8	2.6E-7	2.6E-7	2.6E-7	2.6E-7
HIGH						2.2E-7	2.2E-7	1.3E-7	4.4E-7	4.4E-7	4.4E-7	4.4E-7
LOW						2.2E-7	2.2E-7	1.3E-7	1.3E-7	1.3E-7	1.3E-7	1.3E-7

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	EMISSIONS - G/KG FUEL: 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
E 16	8.3	13.5	11700	0.0	0.0	0.0	1.7E-7	0.0	1.7E-7	1.7E-7	1.7E-7	1.7E-7
E 17	6.2	12.4	11600	0.0	0.0	0.0	2.0E-7	0.0	2.0E-7	2.0E-7	2.0E-7	2.0E-7
F 22	6.0	10.9	7400	0.0	0.0	0.0	3.6E-7	0.0	3.6E-7	3.6E-7	3.6E-7	3.6E-7
H 11	9.4	6.8	13500	0.0	0.0	0.0	2.1E-7	2.1E-7	4.2E-7	4.2E-7	4.2E-7	4.2E-7
K 18	9.6	6.8	12200	0.0	0.0	0.0	2.3E-7	0.0	2.3E-7	2.3E-7	2.3E-7	2.3E-7
AVERAGES												
SPREADER,NO REINJ FROM D.C.				0.0	0.0	0.0	2.4E-7	0.0	2.4E-7	2.4E-7	2.4E-7	2.4E-7
MASS FIRED OVERFEED				0.0	0.0	0.0	2.2E-7	1.1E-7	3.2E-7	3.2E-7	3.2E-7	3.2E-7
HIGH							3.6E-7	2.1E-7	4.2E-7	4.2E-7	4.2E-7	4.2E-7
LOW							1.7E-7	2.1E-7	1.7E-7	1.7E-7	1.7E-7	1.7E-7

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

G/KG FUEL

INDENO(1,2,3-CD)PYRENE

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	*- - - EMISSIONS - G/KG FUEL - - - -* 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
B 30	6.0	10.0	10600	0.0	0.0	0.0	6.7E-7	0.0	6.7E-7	6.7E-7	6.7E-7	6.7E-7
C 45	8.3	15.0	14500	0.0	0.0	1.3E-7	0.0	0.0	1.3E-7	1.3E-7	1.3E-7	1.3E-7
AVERAGE				0.0	0.0	6.6E-8	3.3E-7	0.0	4.0E-7	4.0E-7	4.0E-7	4.0E-7
HIGH						1.3E-7	6.7E-7		6.7E-7	6.7E-7	6.7E-7	6.7E-7
LOW						1.3E-7	6.7E-7		1.3E-7	1.3E-7	1.3E-7	1.3E-7

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	*- - - EMISSIONS - G/KG FUEL - - - -* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	4.1	12000	0.0	0.0	0.0	2.3E-7	2.3E-7	4.7E-7	4.7E-7	4.7E-7	4.7E-7
E 16	8.3	13.5	11700	0.0	3.5E-7	1.7E-7	2.4E-7	0.0	7.6E-7	6.0E-7	4.2E-7	4.2E-7
E 17	6.2	12.4	11600	4.1E-7	0.0	0.0	2.0E-7	0.0	6.1E-7	2.2E-7	2.1E-7	2.0E-7
F 22	6.0	10.9	7400	7.1E-7	7.1E-7	0.0	3.6E-7	3.6E-7	2.1E-6	1.1E-6	7.2E-7	7.2E-7
F 30	6.8	12.3	8000	0.0	0.0	2.9E-7	0.0	0.0	2.9E-7	2.9E-7	2.9E-7	2.9E-7
G 20	9.2	9.6	12200	0.0	0.0	0.0	2.2E-7	0.0	2.2E-7	2.2E-7	2.2E-7	2.2E-7
H 11	3.4	6.8	13500	0.0	0.0	0.0	2.1E-7	3.0E-7	5.1E-7	5.1E-7	5.1E-7	5.1E-7
J 16	8.9	8.2	12600	0.0	0.0	0.0	2.3E-7	2.3E-7	4.6E-7	4.6E-7	4.6E-7	4.6E-7
K 18	9.8	6.0	12200	2.3E-7	0.0	0.0	2.3E-7	0.0	4.5E-7	2.3E-7	2.3E-7	2.3E-7
AVERAGES												
SPREADER,NO REINJ FROM D.C.				2.2E-7	2.1E-7	9.2E-8	2.0E-7	7.1E-8	8.0E-7	4.9E-7	3.7E-7	3.7E-7
MASS FIRED OVERFEED				5.7E-8	0.0	0.0	2.2E-7	1.9E-7	4.7E-7	4.2E-7	4.1E-7	4.2E-7
HIGH				7.1E-7	7.1E-7	2.9E-7	3.6E-7	3.6E-7	2.1E-6	1.1E-6	7.2E-7	7.2E-7
LOW				2.3E-7	3.5E-7	1.7E-7	2.0E-7	2.3E-7	2.2E-7	2.2E-7	2.1E-7	2.0E-7

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

G/KG FUEL

BENZO(G,H,I)PERYLENE

STOKERS WITH REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	EMISSIONS - G/KG FUEL: 10 µM + 3 µM CYCLONE	1 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
C 44	8.9	16.0	15000	0.0	1.3E-7	0.0	0.0	0.0	1.3E-7	1.0E-7	<1.0E-9	<1.0E-9
C 45	8.3	15.0	14500	0.0	0.0	1.3E-7	0.0	0.0	1.3E-7	1.3E-7	1.3E-7	1.3E-7
C 46	9.0	16.0	11900	0.0	0.0	0.0	0.0	2.0E-7	2.0E-7	2.0E-7	2.0E-7	2.0E-7
AVERAGE				0.0	4.4E-8	4.4E-8	0.0	6.6E-8	1.5E-7	1.4E-7	1.1E-7	1.1E-7
HIGH					1.3E-7	1.3E-7		2.0E-7	2.0E-7	2.0E-7	2.0E-7	2.0E-7
LOW					1.3E-7	1.3E-7		2.0E-7	1.3E-7	1.0E-7	<1.0E-9	<1.0E-9

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	EMISSIONS - G/KG FUEL: 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	STACK GAS CLEAN-UP: MULTI-CLONE	E.S.P.	BAGHOUSE
D 22	10.2	4.1	12000	0.0	2.3E-7	0.0	5.1E-7	4.7E-7	1.2E-6	1.1E-6	1.0E-6	1.0E-6
E 16	8.3	13.5	11700	0.0	3.5E-7	0.0	2.8E-7	0.0	6.2E-7	4.7E-7	2.8E-7	2.8E-7
E 17	6.2	12.4	11600	0.0	4.1E-7	0.0	2.4E-7	0.0	6.5E-7	4.7E-7	2.5E-7	2.5E-7
F 22	6.0	10.9	7400	0.0	7.1E-7	0.0	1.2E-6	1.1E-6	3.1E-6	2.8E-6	2.4E-6	2.4E-6
F 33	6.8	12.3	8000	0.0	0.0	0.0	0.0	2.9E-7	2.9E-7	2.9E-7	2.9E-7	2.9E-7
G 20	9.2	9.6	12200	0.0	0.0	0.0	2.2E-7	0.0	2.2E-7	2.2E-7	2.2E-7	2.2E-7
H 11	9.4	6.8	13500	0.0	0.0	0.0	2.1E-7	3.4E-7	5.5E-7	5.5E-7	5.5E-7	5.5E-7
I 09	5.9	10.1	12300	0.0	0.0	0.0	2.8E-7	2.4E-7	5.2E-7	5.2E-7	5.2E-7	5.2E-7
J 15	7.9	3.0	12200	0.0	0.0	0.0	3.8E-7	0.0	3.8E-7	3.8E-7	3.8E-7	3.8E-7
J 16	8.9	8.2	12600	0.0	0.0	0.0	2.3E-7	2.3E-7	4.6E-7	4.6E-7	4.6E-7	4.6E-7
K 18	9.8	6.0	12200	2.3E-7	0.0	2.3E-7	8.6E-7	0.0	1.3E-6	1.1E-6	1.1E-6	1.1E-6
AVERAGES												
SPREADER,NO REINJ FROM D.C.				0.0	2.9E-7	0.0	3.9E-7	2.9E-7	1.0E-6	8.4E-7	6.8E-7	6.8E-7
MASS FIRED OVERFEED				3.8E-8	3.9E-8	3.8E-8	4.1E-7	2.1E-7	7.4E-7	6.8E-7	6.6E-7	6.6E-7
HIGH				2.3E-7	7.1E-7	2.3E-7	1.2E-6	1.1E-6	3.1E-6	2.8E-6	2.4E-6	2.4E-6
LOW				2.3E-7	2.3E-7	2.3E-7	2.1E-7	2.3E-7	2.2E-7	2.2E-7	2.2E-7	2.2E-7

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

G/KG FUEL

3-METHYLCHOLANTHRENE

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	*- - - E M I S S I O N S - G/KG FUEL - - - - -* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
K 18	9.8	6.0	12200	0.0	0.0	0.0	2.3E-7	0.0	2.3E-7	2.3E-7	2.3E-7	2.3E-7

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

DIBENZPYRENES

G/KG FUEL

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES MG/J	*- - - EMISSIONS - G/KG FUEL - - - - -* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
E 16	8.3	13.5	11700	0.0	0.0	0.0	1.7E-7	0.0	1.7E-7	1.7E-7	1.7E-7	1.7E-7
E 17	6.2	12.4	11600	0.0	0.0	0.0	0.0	2.4E-7	2.4E-7	2.4E-7	2.4E-7	2.4E-7
F 22	6.0	10.9	7400	0.0	7.1E-7	0.0	0.0	0.0	7.1E-7	3.9E-7	5.0E-9	2.9E-9
H 11	9.4	6.8	13500	0.0	0.0	0.0	0.0	3.4E-7	3.4E-7	3.4E-7	3.4E-7	3.4E-7
AVERAGES												
SPREADER,NO REINJ FROM D.C.				0.0	2.4E-7	0.0	5.8E-8	8.1E-8	3.8E-7	2.7E-7	1.4E-7	1.4E-7
MASS FIRED OVERFEED				0.0	0.0	0.0	0.0	3.4E-7	3.4E-7	3.4E-7	3.4E-7	3.4E-7
HIGH					7.1E-7		1.7E-7	3.4E-7	7.1E-7	3.9E-7	3.4E-7	3.4E-7
LOW					7.1E-7		1.7E-7	2.4E-7	1.7E-7	1.7E-7	5.0E-9	2.9E-9

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

G/KG FUEL

CORONENE

STOKERS WITHOUT REINJECTION FROM DUST COLLECTOR

SITE TEST	PCT O2	PCT FINES	INPUT VOLATILES NG/J	*- - - E M I S S I O N S - G/KG FUEL - - - - -* 18.5 µM +5.9 µM CYCLONE	1.4 µM CYCLONE + FILTER	CONDENSATE + IMPINGER	XAD-2	WASH	TOTAL	*- - STACK GAS CLEAN-UP - -* MULTI-CLONE	E.S.P.	BAGHOUSE
E 16	6.3	13.5	11700	0.0	0.0	0.0	3.1E-7	0.0	3.1E-7	3.1E-7	3.1E-7	3.1E-7
E 17	6.2	12.4	11600	0.0	0.0	0.0	2.0E-7	0.0	2.0E-7	2.0E-7	2.0E-7	2.0E-7
F 22	6.0	10.9	7400	0.0	7.1E-7	0.0	5.0E-7	0.0	1.2E-6	8.9E-7	5.1E-7	5.0E-7
H 11	9.4	6.8	13500	0.0	0.0	0.0	2.1E-7	0.0	2.1E-7	2.1E-7	2.1E-7	2.1E-7
I 09	5.9	10.1	12300	0.0	0.0	0.0	2.4E-7	0.0	2.4E-7	2.4E-7	2.4E-7	2.4E-7
J 15	7.9	3.0	12200	0.0	0.0	0.0	2.4E-7	0.0	2.4E-7	2.4E-7	2.4E-7	2.4E-7
J 16	8.9	8.2	12600	0.0	0.0	0.0	2.3E-7	0.0	2.3E-7	2.3E-7	2.3E-7	2.3E-7
K 14	9.8	6.0	12200	0.0	0.0	0.0	2.3E-7	0.0	2.3E-7	2.3E-7	2.3E-7	2.3E-7
AVERAGES												
SPREADER,NO REINJ FROM D.C.				0.0	2.4E-7	0.0	3.4E-7	0.0	5.8E-7	4.7E-7	3.4E-7	3.4E-7
MASS FIRED OVERFEED				0.0	0.0	0.0	2.3E-7	0.0	2.3E-7	2.3E-7	2.3E-7	2.3E-7
HIGH					7.1E-7		5.0E-7		1.2E-6	8.9E-7	5.1E-7	5.0E-7
LOW					7.1E-7		2.0E-7		2.0E-7	2.0E-7	2.0E-7	2.0E-7

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

RANGE IN DATA - G/KG FUEL

	SPREADER W/REINJ. FROM O.C.			SPREADER, NO REINJ FROM O.C.			MASS FIRED OVERFEED		
	LOW	AVERAGE	HIGH	LOW	AVERAGE	HIGH	LOW	AVERAGE	HIGH
LITHIUM	8.9E-4	1.4E-2	2.8E-2	8.7E-5	5.0E-4	1.5E-3	3.8E-5	3.4E-4	8.1E-4
BERYLLIUM	2.3E-6	2.6E-4	7.0E-4	3.7E-5	8.1E-5	2.0E-4	2.7E-5	1.0E-4	2.5E-4
BORON	4.9E-5	2.2E-2	7.3E-2	2.7E-4	1.4E-3	2.4E-3	2.1E-3	1.8E-2	5.1E-2
FLUORINE	1.5E-4	3.6E-4	6.1E-4	5.2E-5	9.0E-5	1.9E-4	3.4E-5	3.6E-4	1.0E-3
SODIUM	1.3E-1	4.0E-1	7.5E-1	2.9E-3	4.2E-2	1.5E-1	3.2E-2	6.6E-2	1.3E-1
MAGNESIUM	1.0E-1	2.1E+0	4.7E+0	3.5E-3	3.4E-2	1.2E-1	2.6E-3	1.7E-2	6.3E-2
ALUMINUM	7.0E-1	1.3E+1	2.8E+1	4.8E-1	2.6E+0	6.4E+0	6.4E-2	6.8E-1	2.2E+0
SILICON	1.7E+0	1.3E+1	2.8E+1	5.0E-1	2.2E+0	4.8E+0	7.8E-2	3.2E-1	7.5E-1
PHOSPHORUS	3.0E-2	1.0E-1	1.9E-1	3.7E-3	1.2E-2	2.3E-2	3.2E-3	1.3E-2	2.6E-2
SULFUR	2.9E-1	3.7E-1	6.4E-1	1.0E-2	1.3E+0	3.9E+0	7.5E-2	6.3E+0	3.2E+1
CHLORINE	8.5E-4	4.2E-3	7.0E-3	1.6E-5	1.5E-3	6.9E-3	8.2E-5	4.9E-4	2.1E-3
POTASSIUM	3.9E-2	1.5E-1	3.6E-1	4.1E-2	1.6E-1	3.9E-1	1.6E-2	1.4E-1	2.8E-1
CALCIUM	8.2E-2	4.1E+0	1.2E+1	3.6E-2	6.9E-2	1.8E-1	1.4E-2	5.6E-2	1.3E-1
SCANDIUM	1.5E-3	2.1E-3	2.8E-3	3.0E-4	7.5E-4	1.4E-3	1.2E-4	3.3E-4	6.3E-4
TITANIUM	6.5E-6	3.0E-1	6.6E-1	9.3E-2	3.0E-1	5.5E-1	2.1E-2	7.2E-2	2.1E-1
VANADIUM	4.9E-5	1.0E-2	1.9E-2	3.0E-3	7.8E-3	1.5E-2	5.2E-4	3.3E-3	7.8E-3
CHROMIUM	1.2E-4	2.7E-2	6.9E-2	3.5E-3	4.2E-2	7.4E-2	9.5E-3	1.3E-1	4.7E-1
MANGANESE	2.2E-4	3.5E-2	1.0E-1	9.1E-4	3.6E-3	6.9E-3	1.7E-3	2.2E-2	5.8E-2
IRON	6.6E-3	2.4E+0	9.3E+0	2.4E-1	7.3E-1	1.8E+0	1.6E-1	1.2E+0	3.3E+0
COBALT	4.1E-5	2.0E-3	4.7E-3	1.7E-3	3.1E-3	5.1E-3	3.0E-4	4.7E-3	1.5E-2
NICKEL	2.5E-4	7.3E-2	2.0E-1	5.8E-3	2.3E-2	5.9E-2	5.8E-3	8.7E-2	2.1E-1
COPPER	1.3E-4	8.2E-3	1.6E-2	4.7E-4	3.3E-3	7.3E-3	1.4E-3	2.3E-2	4.6E-2
ZINC	2.2E-4	5.3E-3	1.2E-2	2.0E-4	1.3E-3	4.9E-3	8.3E-4	1.8E-2	4.8E-2
GALLIUM	7.1E-4	1.5E-3	2.3E-3	1.7E-4	8.1E-4	2.5E-3	1.8E-4	1.7E-3	3.8E-3
GERMANIUM	1.9E-4	4.9E-4	1.0E-3	1.3E-4	6.8E-4	1.1E-3	2.6E-4	5.2E-3	2.0E-2
ARSENIC	2.2E-6	1.5E-3	6.1E-3	2.7E-4	9.4E-4	1.9E-3	4.1E-4	8.7E-3	2.4E-2
SELENIUM	8.4E-6	9.1E-4	2.0E-3	1.9E-4	6.1E-4	1.4E-3	3.6E-5	1.0E-3	5.8E-3
BROMINE	4.1E-5	8.9E-5	1.4E-4	8.7E-5	2.3E-4	4.7E-4	3.2E-5	7.5E-4	2.5E-3
RUBIDIUM	2.1E-3	7.8E-3	1.6E-2	4.2E-5	1.3E-3	4.1E-3	1.8E-4	1.6E-3	4.0E-3
STRONTIUM	2.2E-2	4.2E-1	1.5E+0	3.5E-3	1.5E-2	2.9E-2	1.5E-3	6.4E-3	2.1E-2
YTTRIUM	6.8E-4	2.1E-3	3.9E-3	1.1E-3	1.5E-3	2.1E-3	1.1E-4	1.4E-3	4.4E-3
ZIRCONIUM	3.9E-4	9.1E-3	2.3E-2	4.5E-3	6.8E-3	1.3E-2	2.9E-4	2.1E-3	5.7E-3
NIOBIUM	8.7E-5	6.9E-4	1.6E-3	2.2E-4	4.0E-4	6.7E-4	6.3E-5	3.0E-4	1.2E-3
MOLYBDENUM	6.4E-5	4.1E-3	1.3E-2	3.4E-4	1.4E-3	2.1E-3	1.1E-3	3.8E-3	6.9E-3
RUTHENIUM	2.2E-5	4.9E-5	7.7E-5	1.0E-5	2.1E-5	2.8E-5	4.8E-6	1.4E-4	4.7E-4
RHODIUM	7.7E-6	1.7E-5	2.3E-5	4.9E-6	1.2E-5	1.7E-5	2.9E-6	6.4E-5	1.9E-4
PALADIUM	5.1E-5	6.6E-5	8.8E-5	1.4E-5	2.9E-5	5.7E-5	8.9E-6	1.6E-4	4.8E-4
SILVER	1.4E-4	7.3E-3	4.0E-2	7.2E-6	6.6E-4	3.8E-3	2.1E-5	3.7E-4	1.6E-3
CADMIUM	2.4E-5	1.3E-4	2.6E-4	6.5E-5	2.0E-4	4.7E-4	8.0E-5	7.6E-4	2.9E-3
INDIUM	1.0E-5	6.1E-4	3.5E-3	5.9E-6	2.1E-5	5.2E-5	1.3E-5	1.1E-4	4.8E-4
TIN	1.1E-5	4.1E-4	1.0E-3	1.3E-4	3.2E-4	6.7E-4	2.8E-4	7.7E-4	1.5E-3
ANTIMONY	1.2E-4	1.5E-4	1.8E-4	5.8E-5	8.9E-5	1.8E-4	1.2E-4	3.7E-4	9.0E-4
TELLURIUM	8.9E-6	6.3E-5	1.3E-4	1.3E-5	4.6E-5	1.0E-4	6.3E-6	2.5E-4	1.0E-3
IODINE	8.6E-6	2.1E-5	3.2E-5	4.2E-5	7.2E-5	1.5E-4	1.5E-6	6.7E-5	1.3E-4
CESIUM	2.3E-4	8.1E-4	1.6E-3	3.0E-5	7.8E-5	1.2E-4	3.8E-5	7.1E-5	1.4E-4
BARIUM	2.5E-3	3.0E-1	1.5E+0	4.3E-3	8.7E-3	1.4E-2	6.3E-4	9.3E-3	4.1E-2
LANTHANUM	2.0E-4	2.0E-3	3.9E-3	3.5E-4	6.5E-4	1.1E-3	4.0E-5	2.5E-4	5.7E-4
CERIUM	5.7E-4	3.3E-3	6.5E-3	5.0E-4	1.6E-3	2.7E-3	1.1E-4	1.2E-3	5.4E-3
PRASEODYMIUM	5.1E-5	3.4E-4	5.5E-4	1.5E-4	2.8E-4	4.2E-4	5.6E-5	1.4E-4	3.6E-4
NEODYMIUM	1.7E-4	1.2E-3	3.1E-3	4.3E-4	7.4E-4	1.4E-3	8.8E-5	6.9E-4	1.5E-3
SAMARIUM	1.0E-4	3.0E-4	4.8E-4	1.1E-4	2.2E-4	3.0E-4	4.8E-5	2.8E-4	6.3E-4
EUROPIUM	6.4E-5	1.7E-4	3.9E-4	3.8E-5	5.5E-5	7.4E-5	1.2E-5	1.7E-4	3.9E-4

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

RANGE IN DATA - G/KG FUEL

	SPREADER W/REINJ. FROM D.C.			SPREADER,NO REINJ FROM D.C.			MASS FIRED OVERFEED		
	LOW	AVERAGE	HIGH	LOW	AVERAGE	HIGH	LOW	AVERAGE	HIGH
GADOLINIUM	7.7E-5	2.6E-4	7.7E-4	9.4E-5	1.7E-4	2.8E-4	2.4E-5	2.5E-4	6.3E-4
TERBIUM	3.3E-5	6.3E-5	1.0E-4	1.6E-5	3.0E-5	4.6E-5	7.0E-6	6.1E-5	1.3E-4
DYSPROSIUM	7.9E-5	2.8E-4	4.7E-4	1.1E-4	3.4E-4	6.4E-4	2.1E-5	2.4E-4	6.3E-4
HOLMIUM	3.4E-5	5.4E-5	8.3E-5	3.6E-5	4.8E-5	7.4E-5	1.1E-5	6.4E-5	1.4E-4
ERBIUM	7.4E-5	1.0E-4	1.5E-4	6.1E-5	1.1E-4	2.1E-4	1.6E-5	2.0E-4	5.8E-4
THULIUM	1.1E-5	1.4E-4	2.7E-4	4.9E-6	1.4E-5	2.2E-5	1.9E-6	1.7E-4	2.9E-4
YTTERBIUM	7.5E-5	9.4E-5	1.5E-4	6.3E-5	8.1E-5	1.5E-4	1.7E-5	1.8E-4	5.2E-4
LUTETIUM	7.7E-6	2.1E-5	3.4E-5	6.2E-6	8.1E-6	9.5E-6	1.9E-6	5.1E-5	1.4E-4
HAFNIUM	8.6E-6	7.1E-5	9.0E-5	2.1E-5	6.6E-5	1.1E-4	1.2E-5	1.7E-4	4.9E-4
TANTALUM	1.5E-4	3.2E-4	4.5E-4	4.5E-5	7.3E-5	1.6E-4	1.6E-5	3.2E-4	6.2E-4
TUNGSTEN	8.6E-5	1.4E-4	2.1E-4	1.8E-5	5.0E-5	8.9E-5	1.1E-4	3.0E-4	6.5E-4
RHENIUM	2.8E-5	4.2E-5	5.5E-5	1.1E-5	1.6E-5	2.7E-5	3.8E-6	1.1E-4	2.8E-4
OSMIUM	2.2E-5	8.6E-5	1.5E-4	1.3E-5	2.5E-5	5.7E-5	5.3E-6	1.7E-4	4.7E-4
IRIDIUM	2.4E-5	5.2E-5	7.5E-5	7.1E-6	1.4E-5	2.7E-5	3.8E-6	1.1E-4	2.9E-4
PLATINUM	2.2E-5	2.2E-4	6.2E-4	7.1E-6	1.5E-5	2.7E-5	6.3E-6	1.8E-4	4.7E-4
GOLD	7.4E-6	5.6E-5	1.3E-4	4.9E-6	8.7E-6	1.7E-5	1.4E-6	6.5E-5	1.9E-4
MERCURY	4.4E-6	2.8E-5	8.1E-5	1.1E-5	2.4E-5	4.7E-5	7.6E-8	9.3E-6	1.0E-5
THALLIUM	5.8E-6	1.9E-4	3.7E-4	6.7E-5	2.0E-4	4.3E-4	4.4E-4	8.8E-4	1.5E-3
LEAD	2.3E-4	3.1E-3	8.2E-3	8.3E-4	1.6E-3	2.8E-3	3.1E-4	5.4E-3	1.3E-2
BISMUTH	1.7E-5	1.3E-4	2.7E-4	4.5E-6	1.9E-5	3.1E-5	1.3E-5	1.0E-4	2.0E-4
THORIUM	6.8E-5	1.2E-4	1.6E-4	8.4E-5	1.5E-4	2.9E-4	1.8E-5	1.7E-4	4.8E-4
URANIUM	7.9E-5	1.3E-4	2.5E-4	1.1E-4	2.0E-4	3.5E-4	4.7E-5	1.4E-4	3.1E-4
PHENANTHRENE	4.7E-6	6.6E-5	1.5E-4	2.9E-6	4.5E-5	2.2E-4	1.5E-6	7.6E-5	4.7E-4
ANTHRACENE	1.9E-7	2.0E-6	3.0E-6	7.8E-7	1.5E-6	3.0E-6	5.0E-7	6.8E-5	4.7E-4
METHYLANTHRACENES/PHENANTHRENES	2.9E-7	4.4E-6	9.1E-6	1.2E-6	2.1E-5	1.1E-4	1.9E-6	6.9E-6	1.8E-5
FLUORANTHENE	4.1E-7	1.8E-5	3.6E-5	6.9E-7	1.0E-5	4.8E-5	5.2E-7	6.9E-5	4.7E-4
PYRENE	4.8E-7	6.0E-6	1.0E-5	4.8E-7	2.6E-6	4.9E-6	1.3E-6	3.0E-6	5.6E-6
METHYLPYRENE/FLUORANTHENE	2.6E-7	1.5E-6	5.1E-6	4.3E-7	2.0E-6	7.5E-6	2.3E-7	1.0E-6	2.0E-6
BENZO(C)PHENANTHRENE	2.2E-7	4.7E-7	7.9E-7	2.9E-7	5.8E-7	7.1E-7	5.1E-7	7.2E-7	9.4E-7
BENZ(A)ANTHRACENE	4.5E-7	6.6E-7	1.0E-6	1.7E-7	3.4E-7	6.1E-7	2.1E-7	5.7E-7	1.3E-6
CHRYSENE	4.0E-7	1.1E-6	2.1E-6	2.2E-7	1.2E-6	2.3E-6	2.3E-7	9.4E-7	2.2E-6
METHYLCHRYSENES	2.2E-7	4.1E-7	5.6E-7	1.7E-7	4.6E-7	1.1E-6	2.3E-7	4.6E-7	1.0E-6
DIMETHYLBENZANTHRACENES	2.2E-7	2.2E-7	2.2E-7						
BENZOFLUORANTHENES	2.2E-7	8.9E-7	2.5E-6	2.2E-7	6.0E-7	1.5E-6	2.3E-7	7.1E-7	2.1E-6
BENZO(E)PYRENE	2.2E-7	3.1E-7	4.4E-7	1.7E-7	5.1E-7	1.1E-6	2.3E-7	3.6E-7	7.6E-7
BENZO(A)PYRENE	1.3E-7	3.0E-7	4.4E-7	1.7E-7	1.7E-7	1.7E-7	2.3E-7	3.2E-7	4.2E-7
PERYLENE	1.3E-7	2.6E-7	4.4E-7	1.7E-7	2.4E-7	3.6E-7	2.3E-7	3.2E-7	4.2E-7
INDENO(1,2,3-CD)PYRENE	1.3E-7	4.0E-7	6.7E-7	2.2E-7	8.0E-7	2.1E-6	4.5E-7	4.7E-7	5.1E-7
BENZO(G,H,I)PERYLENE	1.3E-7	1.5E-7	2.0E-7	2.2E-7	1.0E-6	3.1E-6	3.8E-7	7.4E-7	1.3E-6
3-METHYLCHOLANTHRENE							2.3E-7	2.3E-7	2.3E-7
DIBENZPYRENES				1.7E-7	3.8E-7	7.1E-7	3.4E-7	3.4E-7	3.4E-7
CORONENE				2.0E-7	5.8E-7	1.2E-6	2.1E-7	2.3E-7	2.4E-7

EPA LEVEL 1 PROCEDURES YIELD ANALYTICAL RESULTS ACCURATE TO WITHIN A FACTOR OF 3.

This is 22-000

Efficiency® GRAPH PADS

STOCK NO.	DESCRIPTION	STOCK NO.	DESCRIPTION
QUADRILLE RULED 50 SHEETS 8½ x 11" 20 SUB			
22-000	4 x 4	22-005	8 x 8
22-001	4 x 4 3 HOLES	22-006	10 x 10
22-002	5 x 5	22-007	4 x 4 8½ x 14
22-003	5 x 5 3 HOLES	22-008	5 x 5 8½ x 14
22-004	6 x 6		
QUADRILLE RULED 50 SHEETS 8½ x 11" 16 SUB			
22-030	4 x 4	22-035	8 x 8
22-031	4 x 4 3 HOLES	22-036	10 x 10
22-032	5 x 5	22-037	4 x 4 17 x 11
22-033	5 x 5 3 HOLES	22-038	5 x 5 17 x 11
22-034	6 x 6		
METRIC QUADRILLE RULED 50 SHEETS 8½ x 11 20 SUB			
22-170	1CM (10MM)		
22-171	5MM		
CROSS SECTION RULED 40 SHEETS 8½ x 11" 20 SUB			
22-020	4 x 4	22-026	10 x 10
22-022	5 x 5	22-027	8 x 8 8½ x 14
22-024	6 x 6	22-028	10 x 10 8½ x 14
22-025	8 x 8		
CROSS SECTION RULED 40 SHEETS 8½ x 11 16 SUB			
22-040	4 x 4	22-045	8 x 8
22-042	5 x 5	22-046	10 x 10
22-044	6 x 6		
CROSS SECTION LITHOGRAPHED 30 SHEETS 8½ x 11 16 SUB			
22-100	4 x 4	22-105	8 x 8
22-102	5 x 5	22-106	10 x 10
22-104	6 x 6	22-107	20 x 20

AMPAD American Pad and Paper Co. Holyoke, Massachusetts 01040